



NEW ZEALAND AMATEUR RADIO

CALLBOOK

AND RADIO REFERENCE

1997/8

NEW ZEALAND ASSOCIATION OF RADIO TRANSMITTERS INC





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The Amateur's Code

ONE

The Amateur is Considerate ... never knowingly using the air in such a way as to lessen the pleasure of others.

TWO

The Amateur is Loyal ... offering loyalty, encouragement and support to fellow radio amateurs, local clubs and to the New Zealand Association of Radio Transmitters, through which Amateur Radio is represented in New Zealand.

THREE

The Amateur is Progressive ... keeping his or her station abreast of science. It is well-built and efficient. His or her operating practice is above reproach.

FOUR

The Amateur is Friendly ... slow and patient sending when requested, friendly advice and counsel to the beginner, kindly assistance, co-operation and consideration of the interests of others; these are the marks of the amateur spirit.

FIVE

The Amateur is Balanced ... radio is a hobby. It is never allowed to interfere with any of the duties owing to home, job, school, or community.

SIX

The Amateur is Patriotic ... with knowledge and station always ready for the service of country and community.

—PAUL M. SEGAL

ex-W3EEA, W9EEA
(Amended by the Editor)

1997/8



NEW ZEALAND AMATEUR RADIO CALL BOOK AND RADIO REFERENCE

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Bi

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AMATEUR RADIO

What is Amateur Radio?

Amateur Radio, also affectionately known as "ham radio", is a hobby of constructing, experimenting and communicating. In New Zealand hams are licensed by the Ministry of Commerce, Radio Operations. Once licensed, an amateur can operate radio equipment from home, from their vehicle and from anywhere in New Zealand. A number of radio frequencies have been set aside for Amateur Radio use. On these frequencies a ham can talk across town or around the world. The scope and possibilities are endless—from sending TV pictures to operating through Amateur Radio satellites.

Who can be Hams?

Just about anyone can become a ham. Some famous people such as Kings and Prime Ministers are hams, but most are just people from all walks of life who like communicating. Young people find Amateur Radio a great training ground, older people find "hamming" an absorbing retirement hobby.

In fact Amateur Radio is more than a hobby, it is a service. Hams provide their equipment and operating skills whenever the need arises—such as for Civil Defence emergencies and Search and Rescue operations.

How do I become a Ham?

Passing a ham licence is quite easy. For a Novice Licence you are required to obtain a 30 per cent pass in a test on radio theory, a 50 per cent pass in understanding Radio Regulations and a morse code sending and receiving test at six words per minute.

Where do I get more information?

The New Zealand Association of Radio Transmitters (Inc.) is a non-profit association of Amateur Radio Operators. NZART has clubs and instructors in most larger cities and towns. For more information on Amateur Radio and details of club and licensing courses near you, contact:

The General Secretary, NZART, Freepost 3565, P.O. Box 40-525, Upper Hutt.



New Zealand Association of Radio Transmitters

INC

(Founder Member of the International Union Region III)

Mail to: FREEPOST 3565, GENERAL SECRETARY, PO BOX 40-525, UPPER HUTT 6415, NEW ZEALAND



PLEASE ENROL ME AS A NEW MEMBER AS FOLLOWS:

TRANSMITTING ☐		NON-TRANSMITTING ☐		STUDENT ☐		JUNIOR ☐		FAMILY ☐		OVERSEAS ☐		ASSOCIATE ☐		LISTENER CALL ☐	
MR	INITIALS	SURNAME													
MS															
MRS															
MISS															
ADDRESS															
OCCUPATION								DATE OF BIRTH							

CALL-SIGN

PREFERRED BRANCH, NAME OR NO

PLEASE FIND ENCLOSED
\$

MY SUBSCRIPTION TO DEC 31
19

I agree to abide by the NZART Constitution

Signature: _____

The information requested (other than date of birth) is for membership records required to be maintained under the Incorporated Societies' Act 1908. Date of Birth is requested for statistical purposes only.

Membership benefits include the automatic inclusion of transmitting Call-sign holders' address details in *Call Book* (published annually).

If you **DO NOT** wish your details published please sign below:

I **DO NOT** want my address details published by NZART _____

IF YOU PREFER TO PAY BY CREDIT CARD PLEASE COMPLETE

VISA	MASTERCARD	EXPIRY DATE
☐	☐	☐
☐	☐	☐
☐	☐	☐
☐	☐	☐
☐	☐	☐
☐	☐	☐
☐	☐	☐
☐	☐	☐
☐	☐	☐

CARD No. _____

NZART MEMBERSHIP SERVICES

New Zealand Radio Frequency Service Liaison on licencing and spectrum matters

International Representation with membership in the International Amateur Radio Union

Amateur Repeater Service co-ordination by the Frequency Management and Technical Advisory Group

Satellite Co-ordination liaison with satellite organizations world-wide

Amateur Beacon Service co-ordination by the Frequency Management and Technical Advisory Group

Satellite Support donations and fund-raising

Spectrum Bandplanning for Council by the Frequency Management and Technical Advisory Group

Public Service Involvement by the Amateur Radio Emergency Corps for Civil Defence and Search and Rescue

Break-In Journal published eleven times a year

Amateur Radio Call Book published annually

Reciprocal Licencing advice for travellers to or from New Zealand

Publications with member discount

QSL Bureau for dispatch and collection of cards

Official Broadcast transmitted monthly

Teletext for current news and promotion

Video Tape Library for branch borrowing

Ionospheric Predictions printed monthly in *Break-In*

Slow Morse Practise for Amateur Radio Operators' Certificate

Monitoring Service to protect our bands

Contests and Awards administration; branch, national and international

Annual Conference, our national forum

VHF Convention for VHF constructors and experimenters

Technical Standards co-ordination

Third Party Insurance for NZART activities, Branches and AREC

Education and Development Group for co-ordination of Radio Training

Examination Division—organisation of Amateur Operator Certificate examinations

Bulletin Board Systems for up-to-date information and messages

Special Projects for funds for promoting radio in developing countries

Legal Advice on tower permits

Branch Services constitutional, legal, financial, etc.

The Constitution of the New Zealand Association of Radio Transmitters Incorporated

is available from:

The General Secretary, NZART, Freepost 3565, PO Box 40-525, Upper Hutt
or NZART URL: <http://www.nzart.org.nz/nzart>

FROM THE CALL BOOK EDITOR

**TONY BUCKLAND
ZL3HAM**

Greetings and welcome to you all. This is my first year as Editor, more than ably assisted by my XYL Liz ZL3LIZ. We have incorporated more reference material and practical tips this year "the things you wanted to know but were afraid to ask".

Many of you asked if the call sign listings could be repositioned at the front of the book, we agreed and that's where they are.

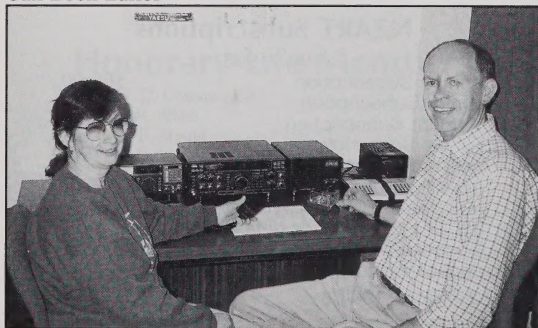
The aim of NZART is to publish an accurate listing of call signs and other important information, and as such, we have endeavoured to obtain the most up to date. Unfortunately we are still unable to obtain licence information from the Ministry of Commerce, maybe due to the Ministry's interpretation of the Privacy Act. A matter eventually, we hope, will be resolved on a permanent basis. New Zealand is probably the only country in the world unable to obtain this information, a position contrary to the spirit and traditions of Amateur Radio. So if you find an error anywhere in the book don't just tell your friends tell us as well please.

While we were busy compiling the Call Book Liz

asked me "where is the solder"? I immediately wondered, as one would, what piece of homebrew kit is about to be constructed. The end result is on the front cover, is it a new type of loop antenna or a special inductor to link the North and South Islands?

In conclusion we would like to wish all readers enjoyment and satisfaction in this addictive hobby of ours.

73 de Tony Buckland ZL3HAM
Call Book Editor



1997-98 Information

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A. J. Wallace ZL1AMW

Immediate Past President:

J. A. Meachen ZL2BHF

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 D. Colin Robertson ZL4KJ
 Noel Rowe ZL3GR
 R. G. (Bob) Stewart Z.2AMJ
 Ron Wills ZL2TT
 Murray Woodfield ZL1CN

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T. D. Carrell ZL3QL

Administration Liaison Officer:

J. F. C. Johnson ZL2AMJ

QSL Manager:

B.E. Stewart ZL2RR

PO Box 857, Wanganui 5000

General Secretary

R. N. Copeland ZL2AKV

NZART Headquarters

- Application for membership
- Subscription renewals
- Publications department
- Change of address (see page 3-4)
- General enquiries

Note: Membership number and Call-sign should be on all correspondence. Please include a Break-In wrapper if available.

NZART Headquarters

Visitors welcome.

Hours: 10-12, 2-4

5th Floor Astral Tower Building

(entrance on west side of building)

88-90 Main Street

UPPER HUTT

Postal: P.O. Box 40-525, Upper Hutt 6415

Telephone and Fax: (+64-4) 528-2170

NZART Subscriptions

1997/1998

Annual Subscription	\$65.00
Junior Subscription	\$35.00
Student Subscription	\$25.00
Family Subscription	\$20.55

per family member with a maximum of \$85.00 per family.

Rebates apply for payment prior to October 31. See *Break-In* for details.

Concessionary membership on application to the General Secretary

Call Book 1997/8 \$15.00

Break-In Single copy \$4.10

Break-In Editor:

J. R. L. Walker ZL3IB

The Official Journal of the New Zealand Association of Radio Transmitters (Inc.)

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—All articles and letters to the Editor:

Editor

Break-In

PO Box 1733

CHRISTCHURCH 8015

CHANGE OF ADDRESS

BREAK-IN DELIVERY PROBLEMS

Advise the General Secretary

PO Box 40-525, Upper Hutt 6415

Official Broadcasts:

J. A. Meachen ZL2BHF

The monthly NZART Official Broadcast is made by:

ZL6A, WELLINGTON

3900kHz LSB

on the last Sunday of each month except December, when the broadcast is made on the Sunday before Christmas.

The broadcast is also made on the National System and some VHF repeaters. A list of these can be found in *Break-In*.

The time of the broadcast is 2000 hours. A repeat broadcast is made at 2100 hours.

Members and Branches are welcome to submit material to ZL2BHF, C/- NZART Headquarters, PO Box 40-525, Upper Hutt, for inclusion in the broadcasts.

CONFERENCE OFFICIAL BROADCAST

The Official Conference Broadcast is held on the Sunday of Queen's Birthday Weekend at 2000 hours.

NATIONAL DIRECTOR AREC:

Brian E. Purdie ZL2TPS

AREC Section Leaders Net

A monthly net of all AREC Section Leaders is held on the third Monday of each month at 1930 hours. Net is conducted by the MANAGER AREC, ZL3EX on 3900kHz Upper Sideband.

Monitoring Service Co-ordinator:

R. Wahrlich ZL1CVK

The NZART Monitoring Service is part of the IARU Monitoring System, a world-wide system of Amateur monitoring stations, concerned with the activities of non-amateur stations in amateur bands.

The primary object of the Monitoring Service is to identify, report, and have removed, all non-amateur stations in the exclusive amateur bands.

Additionally, the Service monitors our bands for statistical purposes to support submissions on band usage.

Reports on "Intruders" should be sent to ZL1CVK, Call Book address.

FMTAG

Chairman: TED BARNES ZL2IP

Secretary: Stephen McNeill ZL4HG

Frequency Co-ordinator: Doug Ingham ZL2TAR

All correspondence to
PO Box 40-525, Upper Hutt 6415

Examination Coordinator

J. Reed ZL2AH

PO Box 40-525, Upper Hutt 6415

World Wide Web

NZART world Wide Web page Editor

Steve Davis ZL2UCX

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Email: steve@zl2ucx.gen.nz

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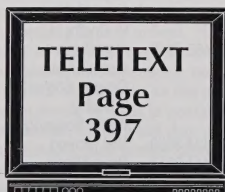
NZART Teletext Editor

Steve Davis ZL2UCX

Phone: (025) 361-796

Fax: (03) 343-0461

Email: steve@zl2ucx.gen.nz



Presidents



1926-27	E. A. Shrimpton	Z2XA
1928	R. J. Orbell	OZ1AX
1929	R. J. Orbell	ZL1AX
1930	T. R. Clarkson, MBE	ZL1FQ
1931	H. P. V. Brown	ZL3CG
1932	D. Wilkinson, QSM	ZL2AB
1933	N. W. Laugesen	ZL3AS
1934	W. F. Collett	ZL4BP
1935	C. N. Edwards	ZL1AA
1936	W. M. Hall	ZL2BH
1937	R. B. Dodds	ZL4FK
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1943-44	C. G. Liddell	ZL2BI
1945-46	E. B. Lough	ZL2OG
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1949-50	J. F. Freeman	ZL2AFB
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1962-64	R. T. Woodfield	ZL2VN
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1983-85	D. J. Mackay	ZL3RW
1985-91	T. D. Carrell	ZL3QL
1991-92	T. C. King	ZL2AKW
1992-97	J. A. Meachen	ZL2BHF
1997-	A. J. Wallace	ZL1AMW

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1947*	W. D. Gorman, MBE	ZL2IY
1961*	J. M. White	ZL2GX
1964	H. F. Arnold	ZL3HA
1966*	C. G. Liddell	ZL3ND
1982	G. C. Blackwell	ZL3NT
1983	A. G. Godfrey	ZL1HV
1985	J. F. C. Johnson	ZL2AMJ
1990	G. Kilpatrick	ZL1BBS
1992	D. J. Mackay	ZL3RW
1992	R. L. Baldwin	W1RU
1996	R. W. G. Kingston	ZL4MK

*Denotes deceased.

AREC Officers

E. Call			Call	Home	Work	Deputy	Call	Home	Work
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ZL6EE	AREC Secretary	Doug Cooke	ZL1TTE	(09) 846-6075	(09) 815-2299				
ZL1EX	Area Manager ZL1	Richard Gamble	ZL1BNQ	(09) 537-1238	(09) 272-0114	Jim Rowe	ZL1AVR	(07) 868-9193	
ZL2EX	Area Manager ZL2	Terry Waghorn	ZL2AYY	(04) 475-9761	(04) 496-9021				
ZL3EXA	Area Manager ZL3	Geoff Chapman	ZL3PX	(03) 385-1815	(03) 363-9721	Gareth Bradshaw	ZL3VP	(03) 332-2406	(03) 363-9797
ZL4EX	Area Manager ZL4	Bill Olsen	ZL4TAB	(03) 455-7884	(025) 369-107	Bob Smith	ZL4OG	(03) 476-3941	(03) 477-4215

AREC Section Leaders And Deputies

E. Call	Section	Section Leader	Call	Home	Work	Deputy Leader	Call	Home	Work
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ZL1EB	North Shore	Bob Williamson	ZL1BNE	(09) 410-6030		Alan Wooller	ZL1AUW	(09) 444-2423	(09) 574-0100
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ZL1EW	Rodney	Mike Ryan	ZL2MR	(09) 425-4401		Jim Goodsir	ZL1BJ	(09) 425-5944	
ZL1EY	Opotiki	Jim Jones	ZL1JRJ	(07) 315-7067		Steve Winder	ZL1ACE	(07) 315-7333	
ZL1EZ	Northern Wairoa	Les Ward	ZL1BIW	(09) 439-7079		K. Bakulich	ZL1BAU	(09) 439-7975	(09) 439-7600
ZL6EA	Far North	Owen Brott	ZL1FC	(09) 408-0729		Brian Tarlton	ZL1BAY	(09) 408-1447	
ZL6EB	Ti Aroha	Brian McConnochie	ZL1BWK	(07) 884-8871	(07) 884-8189	Grant Horn	ZL1UNX	(07) 884-5720	
ZL6EC	Hibiscus Coast	Blair Jackson	ZL1NV	(09) 415-9300	(09) 415-7377	Mike Ryan	ZL2MR	(09) 425-4401	
ZL6EE	Auckland VHF Group	Doug Cooke	ZL1TTE	(09) 846-6075	(09) 815-2299	Peter Loveridge	ZL1UGK	(09) 377-3398	(09) 309-8900
ZL2EA	Gisborne	Rowley Haisman	ZL2APH	(06) 868-6422		Rib Compier	ZL2AJQ	(06) 868-8636	
ZL2EB	New Plymouth	Wayne Gaudin	ZL2VN	(06) 753-5800	(06) 753-6139	David Leask	ZL2AYU	(06) 753-3493	(06) 751-0680
ZL2EC	Motueka	Robin Reeve	ZL2FZ	(03) 528-6868		Alex Johnson	ZL3DA	(03) 528-6901	
ZL2ED	Wanganui	Craig Mills	ZL2MD	(06) 345-0766		Tony Shearman	ZL2ALO	(06) 344-6110	
ZL2EE	Hastings	Robert Wallace	ZL2WRJ	(06) 878-4993	(06) 878-7119	Mark Vidulich	ZL2LAB	(06) 879-7455	
ZL2EF	Kapiti	Len Blackley	ZL2TFP	(04) 298-7048	(04) 472-6881	Dennis Young	ZL2BFI	(04) 298-6664	
ZL2EG	Tararua District	Keith Browning	ZL2TPQ	(06) 374-9355	(06) 374-6322	Rikki Allison	ZL2BRU	(06) 374-9321	
ZL2EI	Manawatu	Brian Jardine	ZL2TPJ	(06) 326-9077		Peter Moore	ZL2AUB	(06) 354-7861	(06) 357-2222
ZL2EJ	Wairarapa	Colin Coutts	ZL2FC	(06) 377-0420		Jeanette Lambert	ZL2UDV	(06) 378-8213	
ZL2EK	Rahotu Coastal	Peter McNeil	ZL2BQW	(06) 761-8028		Tom Clouston	ZL2AQP	(06) 761-8082	
ZL2EL	Upper Hutt	Gavin Smith	ZL2ACT	(04) 527-8533	(025) 661-080	Arnold Darby	ZL2ASD	(04) 526-6710	
ZL2EN	Nelson	Dolph Lyford	ZL2UL	(03) 548-6023		K. Simpson	ZL2TBE	(03) 523-9183	
ZL2EO	Marlborough	Peter Johnston	ZL2PKJ	(03) 578-1942		Roger Lawson	ZL2BHG	(03) 578-6986	
ZL2EP	Inglewood	Tarry Martin	ZL2KV	(06) 756-7627		Graham Meads	ZL2TGM	(06) 756-7998	(06) 756-7194
ZL2EQ	Napier	Les Reid	ZL2LR	(06) 835-3799		John Lane	ZL2ARF	(06) 844-3266	(025) 483-043
ZL2ER	Wairarapa	Bill Luscombe	ZL2AVL	(06) 387-6707		Dave Inkster	ZL2BLI	(06) 385-8596	(06) 385-8361
ZL2ES	Horowhenua	Steven Knight	ZL2UKC	(06) 367-9509	(06) 367-9020	Alan McLauchlan	ZL2AVA	(06) 368-9274	
ZL2ET	Tiahi Bay	John Palmer	ZL2WJP	(04) 478-4490		Brian Amies	ZL2AYF	(04) 232-6378	(04) 232-4954
ZL2EV	Patea	Graeme Bateman	ZL2BHD	(06) 278-4793		Peter Williams	ZL2AID	(06) 278-4292	
ZL2EW	Marton	Brian Purdie	ZL2TPS	(06) 329-3606	(06) 351-5309	Joe Abrahams	ZL2JOE	(06) 327-8524	
ZL2EY	Hutt Valley	Bob Sewell	ZL2ASO	(04) 564-6929					
ZL7EA	Feilding	Gil Hitchman	ZL2BNA	(06) 323-5847		A. Abel	ZL2QR	(06) 323-6538	
ZL7EC	Waitara	Jonathan Herbert	ZL2BPW	(06) 752-3441	(06) 752-3431				
ZL7ED	St. Wairarapa	Neil Rait	ZL2BLM	(06) 308-9341		Ian Miles	ZL2TZW	(06) 308-9310	
ZL7EE	Wellington VHF	Jeff Sayer	ZL2TFZ	(04) 527-9648	(04) 569-2170	John Yaldwyn	ZL2TRV	(04) 478-3222	(04) 569-2170
ZL3EA	Christchurch	Ted McCulloch	ZL3IC	(03) 327-7308		Dudley Berry	ZL3TOB	(03) 389-4718	(03) 364-2102
ZL3EB	Westland	John Melse	ZL3VLJ	(03) 762-6549		Alan Thomas	ZL3UCP		
ZL3EC	St. Canterbury	Glenn May	ZL3GL	(03) 686-0306	(03) 688-9073	Paul Streeter	ZL3PS	(03) 684-5030	
ZL3ED	Ashburton	Les Vincent	ZL3UX	(03) 303-6306		Aaron Hunter	ZL3AR	(03) 308-3594	
ZL3EE	St. Westland	Ron Searle	ZL3MY	(03) 755-6741					
ZL3EF	Reefton-Buller	Kerry Silverwood	ZL3CG	(03) 789-9750		John Kilkolly	ZL3SO	(03) 789-7004	
ZL3EG	Nth. Canterbury	Ian Hewson	ZL3CE	(03) 327-6647		Anne McMaster	ZL3VR	(03) 327-8278	
ZL3EH	Kaikoura	Bill Jackson	ZL3PZ	(03) 319-5981		H. Bryant	ZL3GB	(03) 319-5897	
ZL4EA	Otago	Dave Stevenson	ZL4SB	(03) 454-2527	(03) 455-5440	Alan Cross	ZL4OK		
ZL4EB	E. Southland	Dick Whyte	ZL4AQ	(03) 208-6793		Alastair Allan	ZL4AQ	(03) 208-7288	
ZL4EC	Southland	Neville Checketts	ZL4OX	(03) 216-6599		Crosbie Stewart	ZL4TIC	(03) 216-3060	
ZL4ED	Balclutha	John Blair	ZL4AM	(03) 415-7849		P. Beeby	ZL4TGU	(03) 418-2337	(03) 418-1239
ZL4EE	Central Otago	Peter Leigh	ZL4APO	(03) 445-1798		Wattie Beveridge	ZL4ST	(03) 448-6880	(03) 448-8038
ZL4EF	North Otago	Philip Gilchrist	ZL4VPG	(03) 434-1557	(04) 434-8559	Neil Mcleod	ZL4SN	(03) 434-7253	
ZL4EG	Queenstown	Russ Watson	ZL4JW	(03) 442-9374	(03) 441-0013	Dave Allison	ZL2TSI	(03) 442-5258	

AREC records have been updated from Branch Advice Notes. Any additions or omissions to AREC Secretary

BRANCHES AND MEMBERSHIP

A Policy Statement by Council (Revised 1995)

Members will be aware of the requirement in paragraph 27 of the Association's Constitution that Branches must not admit to membership persons who hold an amateur station licence, but who are not members of the Association.

Over the years there have been attempts to repeal or modify these provisions, but successive National Conferences have made it quite clear that members will have none of it. The rationale for this Constitutional provision is that it provides at least one way in which non-members can be denied the privileges which membership of the Association brings. We cannot stop our non-member brethren enjoying some benefits—such as the negotiations the Association conducts with the licensing authorities, the use of repeaters, and the enjoyment of the benefits which band plans bring. Council is firmly of the view that it is unfair to those who do pay their subscriptions if the lot of non-members is made easier by the ready availability of members' privileges which the Association is, in fact, able to withhold. Further, the Association has to take into account the feelings of its many voluntary workers, who devote many hours to Association matters, and, in addition, pay their subscriptions as well. These persons have even greater cause to complain if the Association makes benefits available to non-members who do not contribute to these benefits by at least joining the Association and paying a subscription.

Branch Officers

It is disturbing to Council to find that some Branches not only fail to have regard to their Constitutional obligations by ensuring that licensed amateurs who are not Association members do not join the Branch, but even have as Branch Officers persons who are licensed amateurs but not members of the Association. This is clearly unconstitutional. If an Officer is not an Association member, but is a licensed amateur, then there is a breach of the Association Constitution. This should also be a breach of the Branch Constitution—if it is not, the Branch Constitution is faulty and must be brought into line. (See the Association's Constitution, paragraph 27.)

Regrettably, there are still one or two clubs that indulge in a fiction—they attempt to evade their responsibilities to NZART, whether arising under paragraph 27 or otherwise, by purporting to distinguish between the local club and the NZART branch. This fiction ignores the realities, and is not acceptable. The

reality is that the local club itself is the NZART Branch, and the Branch Constitution must be changed to reflect this commitment to NZART if that is necessary. Any attempt (for that is all it is) to circumvent the Association Constitution by resorting to this fiction is unfair to the local NZART members, other NZART members, and the Association itself.

Relationship between Branches and the Association

Sometimes, Branch members criticize these rules, often using catch phrases such as "breach of human rights", or "interference with independent clubs". These provisions of the Association Constitution are nothing of the sort. They are part of the contract that members make when they join the Association. By applying to become or by remaining an Association Branch, the Clubs or Branches surrender their independence to the extent required to conform with the Association's Constitution. Branches are expected to keep their houses in order; if they are not prepared to do this, then they should surrender their status as a Branch. There is nothing in the Human Rights Act to prevent the Association and its Branches from discriminating between members and non-members

Whose job is it to be the policeman?

The answer is—nobody's and everybody's. The Association's Constitution does not specifically charge Council or any Officer with the task of enforcement. So long as we remain members, we are all parties to the contract represented by the Constitution and we each individually have that responsibility. If a Branch is Incorporated in its own right, then the Branch in its corporate capacity also has that duty.

Hardship

Hardship is not a ground for failing to become an Association member. Association subscriptions can be remitted under paragraph 7(e) of the Association's Constitution and Council will authorize this where there is genuine hardship. But Council's experience has been that the genuine hardship is rare indeed. Many claims of hardship over the years have been found, on enquiry, not to be genuine. Application for this concession should be made in person by the member. Council will then usually discreetly seek further information from the Branch. Council would expect there to be no more than half

a dozen such cases throughout the country at any one time. The privacy of the applicant is respected by ensuring that as few persons as possible within the Association are aware of the Application.

Why are we telling you this now?

Council has never said anything else. But there are now some situations which create special problems for the Association.

The Association enters into contracts with public corporations and SOEs relating to right of entry for the siting of repeaters. These contracts recognize potential liability and require the Association as a condition of the contract to take public liability insurance which could be up to \$2 million or more. This insurance will be taken on terms which will extend to protect both the Association and individual members. Naturally, the corporations we are dealing with take comfort in this insurance, as they know that while the insurance is in place the Association has the indemnities required to meet any claims. This means that to come within the Association's cover, individuals must be members, as the Association has no intention of paying additional premiums to insure against the actions of non-members. If an individual incurs liability as agent of the Association, then that individual must be a member to take the benefit of any cover the Association arranges. The Association will

not appoint non-members as its agents, as this would nullify the insurance cover.

As Branches have responsibility with the Association for repeaters, Branch Officers are required to be Association members. This is not more than the Constitutional requirement. Because of these matters, Council will, in future, have to be more active in seeing that the Constitution is observed.

As the appointment of repeater trustees is an Association matter, even if exercised through Branches, repeater trustees must also be members. This, likewise, is a necessary consequence of the provisions of the Constitution. Council, in future, will have to ensure that repeater trustees are Association members, not only because this is a Constitutional requirement, but also to ensure that the persons responsible for the operation of repeaters have adequate insurance cover to meet the requirements of our contracts with the public corporations.

Action

Take action now to ensure that your Branch complies with the Association's Constitution. Your Councilors will help you with advice as required.

This policy statement was first published in the August 1990 *Break-In*. It is now reissued in a slightly revised form.

NZART Council



NZART BRANCH DIRECTORY

Alphabetical List of Branches

01M Ashburton	79N Howick	52C Northern Hawkes Bay	60N Taupo
02N Auckland	17N Huntly—in recess	73N Northern Wairoa	39N Tauranga
66N Auckland VHF	18C Hutt Valley	72N Opotiki	77N Te Aroha
04V Cambridge	18C Inglewood—in recess	30S Otago	40N Te Awamutu
15C Central Hawkes Bay	76M Kaikoura	31C Pahiatua	53N Te Puke
61S Central Otago	69C Kapiti	65N Papakura	41N Thames
05M Christchurch	67N Kawerau	54C Patea	42C Titahi Bay
56M Christchurch West	20C Manawatu	75S Queenstown	57N Tokoroa
51N Eastern Bay of Plenty	59N Mangakino	83N Raglan	63C Upper Hutt
08S Eastern Southland	21N Manukau	32C Rahotu Coastal	43N Waihi
09C Egmont—in recess	22C Marlborough	62M Reefton-Buller	81N Waikato VHF
78N Far North	23C Marton	71N Rodney	45C Wairarino
70C Feilding	44N Matamata	33N Rotorua	46C Wairarapa
10N Franklin	24C Motueka	34M South Canterbury	47C Waitara
11C Gisborne	25C Napier	35S South Otago	55N Waitomo
12N Hamilton	26C Nelson	36M South Westland	48C Wanganui
13C Hastings	27C New Plymouth	06C Southern Hawkes Bay	50C Wellington
14C Hawera	68M North Canterbury	82C Southern Wairarapa	74C Wellington VHF
58N Helensville—in recess	64S North Otago	37S Southland	03N Western Suburbs
80N Hibiscus Coast	29N North Shore	38N Taumarunui	49M Westland
16C Horowhenua			28N Whangarei

Letter after Branch number denotes electoral district—N=Northern, C=Central, M=Midland, S=Southern

01 Ashburton

Physical Address: Ashburton Aviation Museum Society
 Postal Address: PO. Box 361, Ashburton. 8300
 Branch Callsign: ZL3AF
 President: Brian Rickard ZL3TJW
 Secretary: Ken Stirling ZL3AFB
 Net Information: 144.600 on Mondays at 2030 except club nights
 Contact Person: Lester Moller, ZL1VF
 Contact Phone Number: (03) 308-1007
 Meeting Information: Second Monday each month (except January) at 1930

02 Auckland

Physical Address: 400 St Johns Road, Meadowbank
 Postal Address: PO. Box 18-003, Glen Innes, Auckland 1130
 Branch Callsign: ZL1AA
 President: Gwynne Rowe ZL1RGR
 Secretary: Philip Clancy ZL1TSC
 Net Information: 146.600 on Mondays at 2015 & 3645 kHz at 2100
 Contact Person: Laurie Jones ZL1CAP
 Contact Phone Number: (09) 575-5094
 Meeting Information: Third Tuesday each month (except January) at 1930 hours. Mid-week last Wednesday (except December) at 1300. Saturday every week at 0900

03 Western Suburbs

Physical Address: 3000 Great North Road, New Lynn
 Postal Address: PO. Box 15-122, New Lynn, Auckland 1232
 Branch Callsign: ZL1AC
 President: Judith Hildreth ZL1JDL
 Secretary: Mark Veldhuisen ZL1TMV
 Net Information: 3620 kHz on Fridays at 1930. 146.525 on Thursdays at 1930
 Contact Person: Ross Redell ZL1VRR
 Contact Phone Number: (09) 629 0504
 Meeting Information: Second Monday of each month at 1930

04 Cambridge Radio Club

Physical Address: Cambridge Community Seminar Centre, 22a Taylor Street
 Postal Address: PO. Box 650, Cambridge 2351
 Branch Callsign: ZL1ASW
 President: Des Hamblin ZL1HP
 Secretary: Ian Honey
 Net Information: 3774 kHz Tuesday at 1930. Waikato 695 on Sunday at 1930
 Contact Person: Des Hamblin ZL1HP
 Contact Phone Number: (07) 827-6247
 Meeting Information: First three Tuesdays of each month at 1930

05 Christchurch Amateur Radio Club

Physical Address: 27 Galbraith Avenue, Avonside
 Postal Address: PO. Box 1733, Christchurch 8015
 Branch Callsign: ZL3AC
 President: Steve Davis ZL2UCX
 Secretary: Jim Nichols, ZL3ON
 Net Information: Canterbury 725 on Sundays at 2000
 Contact Person: Steve Davis ZL2UCX
 Contact Phone Number: (025) 361 796
 Meeting Information: First Wednesday each month February to December at 1930

06 Tararua District Radio Club

Physical Address: Woodville Race Course Tea Kiosk
 Postal Address: PO. Box 43, Dannevirke 5491
 Branch Callsign: ZL2LB
 President: Joe Ward ZL2AX
 Secretary: Brian Lawn ZL2AJS
 Net Information: 146.650 on Fridays at 2100
 Contact Person: Dave Turner ZL2ABT
 Contact Phone Number: (06) 374-7990
 Meeting Information: Second Sunday each month Woodville Racecourse Tea Kiosk 1400

08 Eastern Southland

Postal Address: R. W. McIntosh, 59 Hamilton Street, Gore, Pukerau 9700
 Branch Callsign: ZL4AL
 President: John Norton ZL4IM
 Secretary: Ron McIntosh ZL4RH
 Contact Person: Neil Gilder ZL4GL
 Contact Phone Number: (03) 208-4192
 Meeting Information: Fourth Tuesday each month at various venues at 2000

09 Egmont

In Recess

10 Franklin Amateur Radio Club

Physical Address: Stadium Drive, Pukekohe
 Postal Address: 25 John Street, Pukekohe 1800
 Branch Callsign: ZL1SA
 President: Bob Holt ZL1BBZ
 Secretary: Tom McDonald ZL1TMC
 Net Information: 3700 kHz on Sundays at 0900. Bombay 690 on Sundays at 0930
 Contact Person: Monty Armstrong ZL1US
 Contact Phone Number: (09) 238-6567
 Meeting Information: Third Tuesday each month at 2000

11 Gisborne Amateur Radio Club

Physical Address: Cosmopolitan Clubrooms, Derby Street
 Postal Address: PO. Box 1017, Gisborne 3815
 Branch Callsign: ZL2AA
 Secretary: Ric Coleman ZL2RIC
 Net Information: 3685 kHz evenings from 2030. 146.800 every evening
 Contact Person: Rib Compier ZL2AJQ
 Contact Phone Number: (06) 868 8636
 Meeting Information: Second Monday each month at 1930

12 Hamilton Amateur Radio Club

Physical Address: 88 Seddon Road,
 Postal Address: PO. Box 606, Hamilton 2015
 Branch Callsign: ZL1UX
 President: G. Petrie
 Secretary: Phil King ZL1PK
 Net Information: 3575 kHz on Mondays at 1930. 146.525 on Tuesdays at 2000
 Contact Person: Phil King ZL1PK
 Contact Phone Number: (07) 847-1320
 Meeting Information: Third Wednesday of each month at 1930

13 Hastings/Havelock North

Physical Address: Waimarama Surf Lifesaving Rooms, Grove Road
 Postal Address: C/- Brian Fennessy ZL2TBF, 108 Norton Road, Hastings, Hastings 4201
 Branch Callsign: ZL2AS
 President: David Walker ZL3DK
 Secretary: Brain Fennessy ZL2TBF
 Net Information: 3615 kHz on Sundays at 0900 and 147.250 Repeater
 Contact Person: David Walker
 Contact Phone Number: (06) 879 8548
 Meeting Information: Fourth Wednesday each month (except December) at 1930 at Surf Life Club

14 Hawera Amateur Radio Club

Postal Address: 126 Fairfield Road, Hawera 4800
 Branch Callsign: ZL2AWW
 Contact Person: Peter Williams ZL2AID
 Contact Phone Number: (06) 278-4292
 Meeting Information: Irregular

15 Central Hawkes Bay Radio Club

Physical Address: "Pukeroa" Home for Disabled
 Postal Address: PO. Box 327, Waipukurau 4176
 Branch Callsign: ZL2AR
 Net Information: 3650 kHz at 2000
 Contact Person: Victor Brosnan ZL2ACP
 Contact Phone Number: (06) 857-7080
 Meeting Information: Third Monday each month at 1930

16 Horowhenua

Physical Address: Jack Allen House, Durham Street
 Postal Address: C/- E. P. Tombs Ihakara, RD 1, Levin, Levin 5500
 Branch Callsign: ZL2DS
 President: Allen Little ZL2GB
 Secretary: Evan Tombs ZL2IG
 Net Information: 3590 kHz on Sundays at 0900. 147.575 on Sundays at 1000
 Contact Person: Evan Tombs ZL2IG
 Contact Phone Number: (06) 368 8770
 Meeting Information: Last Sunday, odd months at Jack Allen's House at 1400

17 Huntly Radio Club

Physical Address: Public Amenities Building, Huntly Domain
 Postal Address: C/- R.M. Wahrlich, 39 Whangamarino Road, RD 2., Huntly 2152
 Branch Callsign: ZL1BL
 President: Rohan Warlick ZL1CVK
 Net Information: 146.5 simplex every thursday at 1930
 Contact Person: Rohan Warlick ZL1CVK
 Contact Phone Number: (07) 826-3313
 Meeting Information: Last Tuesday of each month at 1930

18 Hutt Valley

Physical Address: Birch Street Reserve,
 Postal Address: PO. Box 30-519, Lower Hutt 6315
 Branch Callsign: ZL2HV
 President: Bruce Douglas ZL2WP
 Net Information: 3675 kHz on Sundays at 0900
 Contact Person: Bruce Douglas
 Contact Phone Number: (04) 565-1026
 Meeting Information: First Monday (second Monday in June), each month at 1930 at the Hutt Valley. No meeting in January. Also each Friday at 1930 in the clubrooms

19 Inglewood

Postal Address: PO. Box 74, Inglewood 4651
 Secretary: Terry Martin ZL2KV
 Contact Person: Peter Cramer ZL2AIS
 Contact Phone Number: (06) 756-7314

20 Manawatu Amateur Radio Society

Physical Address: Totara Road
 Postal Address: PO. Box 1718, Palmerston North 5315
 Branch Callsign: ZL2KO
 President: Ian Thompson ZL2IAN
 Secretary: Bruce Galley ZL2WBG
 Net Information: 3570 kHz on Sundays at 0930. 147.125 on Thursdays at 2000
 Contact Person: Eric Barker ZL2AAG
 Contact Phone Number: (06) 358-9670
 Meeting Information: First Wednesday each month at 1930, and also on the fifth Wednesday when they occur

21 Manukau Radio Club

Physical Address: 8 Guide Place,
 Postal Address: 8 Guide Place, Papatotetoe 1701
 Branch Callsign: ZL1QB
 President: Terry Rist ZL1TR
 Secretary: Jim Milligan
 Net Information: 3652 kHz on Sundays at 0900. 146.550 on Monday s at 1930
 Contact Person: Terry Rist ZL1TR
 Contact Phone Number: (09) 636 7965
 Meeting Information: Third Wednesday each month at 1930. Technical night fourth Wednesday each month at 1930

22 Marlborough Amateur Radio Club

Physical Address: CD Headquarters, Withers Road extension,
 Postal Address: PO. Box 432, Blenheim 7315
 Branch Callsign: ZL2KS
 President: Ken Menzies ZL2BJV
 Secretary: John Neal ZL3LI
 Net Information: 3575 kHz on Sundays at 0900. Blenheim 695 on Mondays at 1930
 Contact Person: John Neal ZL3LI
 Contact Phone Number: (03) 577-7442
 Meeting Information: Second Thursday each month except January, at 1930 at the CDHQ

23 Marton & Districts

Physical Address: Marton CDHQ Rooms
 Postal Address: PO.Box 279, Marton 5460
 Branch Callsign: ZL2AMS
 President: Ray Johnson ZL2VRJ
 Secretary: Fred Rubery ZL2NR
 Net Information: 6775 on Sundays at 2030
 Contact Person: Dusty Miller ZL2VS
 Contact Phone Number: (06) 327 6225
 Meeting Information: Fourth Wednesday each month at 1930 at Marton CDHQ

24 Motueka

Postal Address: PO. Box 218, Motueka 7161
 Branch Callsign: ZL2GK
 President: Alex Johnson ZL3DA
 Secretary: Ian Duxbury ZL3AFQ
 Contact Person: Stephen Fogerty ZL2ASF
 Contact Phone Number: (03) 528-8707
 Meeting Information: First Monday each month (except public holidays) at 1930 at members' homes

25 Napier Amateur Radio Club

Physical Address: 123 Latham Street, Marewa
 Postal Address: 20 Exeter Crescent, Pirimat, Napier 4001
 Branch Callsign: ZL2GT and ZL2ABJ
 President: Mike Bull ZL2VM
 Secretary: Denise Gentles ZL2DMG
 Net Information: 3615 kHz and Napier 725 on Sundays at 0900
 Contact Person: Don Mudford ZL2AMV
 Contact Phone Number: (06) 836-6760
 Meeting Information: Third Sunday each month at 1930

26 Nelson Amateur Radio Club

Physical Address: TS. Tallisman Hall, Harley Street
 Postal Address: PO. Box 414, Nelson 7015
 Branch Callsign: ZL2ARG
 President: Dolph Lyford ZL2UL
 Secretary: Gordon Murphy ZL2UAO
 Net Information: 3890 kHz on Sundays at 0900
 Contact Person: Dolph Lyford ZL2UL
 Contact Phone Number: (03) 548-6023
 Meeting Information: Fourth Wednesday each month (except December and January) at 1930

27 New Plymouth Amateur Radio Club

Physical Address: CDHQ Marsland Hill, 45 Robe Street
 Postal Address: C/- CDHQ, 45 Robe Street, New Plymouth 4601
 Branch Callsign: ZL2AB
 President: Roy Simon ZL2KH
 Secretary: Vivienne Jones ZL2VJ
 Net Information: Wednesday at 1930 on 720. Thursday at 1930 on 8475. AM net on Wednesday at 2030 on 3850 kHz and HF net on Thursday at 2000 on 3593 kHz
 Contact Person: Roy Simon ZL2KH
 Contact Phone Number: (06) 758 2156
 Meeting Information: Third Tuesday each month (except January) at 1930

28 Whangarei Amateur Radio Club.

Physical Address: Heritage Park, State Highway 14,
 Postal Address: PO. Box 10078, Te Mai, Whangarei 0130
 Branch Callsign: ZL1AM
 President: Dave Ellis ZL1BZL
 Secretary: Charlie Moates ZL1DAC
 Net Information: 3585 kHz on Sundays at 0900. Whangarei 720 on Mondays at 1930
 Contact Person: Charles Moates ZL1DAC
 Contact Phone Number: (09) 434 7292
 Meeting Information: First Wednesday each month at 1930. Informal meetings all other Wednesdays at 1700

29 North Shore

Physical Address: CDHQ, 400 East Coast Road, Mairangi Bay
 Postal Address: PO. Box 36-144, Northcote, North Shore, Auckland 1330
 Branch Callsign: ZL1AB
 President: Jumbo Godfrey ZL1HV
 Secretary: Alan Wooller ZL1AUW
 Net Information: 3775 kHz on Sundays at 0900. 147.425 on Wednesdays at 1945
 Contact Person: Maurie Ogden ZL1UTL
 Contact Phone Number: (09) 445 7528
 Meeting Information: First Monday each month (except January) at 1930 general meeting, and fourth Monday is the Construction group

30 Otago

Physical Address: 109 Macandrew Road, South Dunedin
Postal Address: P.O. Box 5485, Dunedin 9015
Branch Callsign: ZL4AA
President: Vern Haig ZL4JN
Secretary: Alan Rackley ZL4CG
Net Information: Dunedin 690 on Sundays at 1930
Contact Person: Alan Gilchrist ZL4PZ
Contact Phone Number: (03) 488-0608
Meeting Information: Each Wednesday (except late December and early January) at 1930

31 Pahiatua

In Recess refer to Branch 06.

32 Rahotu Coastal Inc Opunake Radio Club

Physical Address: 166 Tasman Street
Postal Address: 166 Tasman Street, Opunake 4854
Branch Callsign: ZL2ANN
President: Peter McNeil ZL2BQW
Secretary: J. N. Jago ZL2DBX
Contact Person: H. Gorton ZL2ADU
Contact Phone Number: (06) 761 7027
Meeting Information: As required

33 Rotorua Amateur Radio Club

Physical Address: Wohlmann House, 3 Hinemoa Street
Postal Address: P.O. Box 1766, Rotorua 3215
Branch Callsign: ZL1ROT
President: Ken McCulloch ZL1GWN
Secretary: Keith Stewart
Net Information: Rotorua 735 on Fridays at 2030
Contact Person: Murray Thompson
Contact Phone Number: (07) 348 1157
Meeting Information: Third Tuesday each month at 1930. Informal, first Tuesday each month at 1930

34 South Canterbury

Physical Address: CDHQ Bank St,
Postal Address: P.O. Box 429, Timaru 8615
Branch Callsign: ZL3UR
President: Brian McDonald ZL3HF
Secretary: Rex Firman ZL3DY
Net Information: Timaru 695 on Sundays at 1930
Contact Person: Brian McDonald ZL3HF
Contact Phone Number: (03) 686-1157
Meeting Information: Last Monday of each month (except December) at 1930

35 Balclutha

Physical Address: Main South Road
Postal Address: "Graylea", RD 2, Balclutha 9200
Branch Callsign: ZL4JF
Net Information: 3585 kHz on Mondays at 2000. Kuriwao 675 on Mondays at 1930
Contact Person: Philip Beeby ZL4TCU
Contact Phone Number: (03) 418-2337
Meeting Information: First Tuesday each month (except January) at 2000

36 South Westland

Physical Address: 7 Whitcombe Terrace, Hokitika 7900
Contact Person: Dave Robinson ZL3GW
Contact Phone Number: (03) 755-6741
Meeting Information: Irregular

37 Southland

Physical Address: 249 Etrick Street
Postal Address: P.O. Box 1260, Invercargill 9515
Branch Callsign: ZL4GQ
President: Crosbie Stewart ZL4TIC
Secretary: Clifford Shirreffs
Contact Person: Crosbie Stewart ZL4TIC
Contact Phone Number: (03) 216-3060
Meeting Information: Third Tuesday of each month, (except January) at 1930

38 Taumarunui

Postal Address: C/- L. H. Palmer, 229 Taupo Road, Taumarunui.
President: L. Palmer
Secretary: T. Hardisty
Contact Person: Trevor Hardisty
Contact Phone Number: (07) 895 7994
Meeting Information: As required

39 Tauranga Amateur Radio Club

Physical Address: CDHQ, Barks Corner
Postal Address: C/- CDHQ, Private Bag 12803, Tauranga 3000
Branch Callsign: ZL1TP
President: Brian Heywood ZL2UDY
Secretary: Gordon Cooper ZL1KL
Net Information: 3600 kHz on Sundays at 0900. Tauranga 680 on Wednesdays at 2030
Contact Person: John Collin ZL1BNW
Contact Phone Number: (07) 578-9213
Meeting Information: First Thursday each month except January at 1930

40 Te Awamutu Amateur Radio Club

Physical Address: Waipa District Council Boardroom, Bank Street
Postal Address: P.O. Box 583, Te Awamutu 2400
Branch Callsign: ZL1CB
President: Ewen Parsons ZL1LP
Secretary: Win Parr ZL1BBN
Net Information: 3865 kHz on Thursdays at 2000. 147.525 on Sundays at 1900
Contact Person: Ewen Parsons ZL1LP
Contact Phone Number: (07) 871-5487
Meeting Information: Fourth Wednesday each month at 1945, except December and January

41 Thames

Physical Address: 109 Lambert Street
Postal Address: 109 Lambert Street, Thames 2801
Branch Callsign: ZL1DF
President: Peter Williams ZL1BEB
Secretary: Lea Bateman ZL1APF
Net Information: 3850 kHz on Sundays at 0900
Contact Person: Lea Bateman ZL1ABF
Contact Phone Number: (07) 868-7054
Meeting Information: Irregular as required

42 Titahi Bay Amateur Radio Club.

Physical Address: Tireti Hall, Tireti Road, Titahi Bay
Postal Address: P.O. Box 57-028, Mana, Wellington 6006
Branch Callsign: ZL2AFV
President: Michael Burch ZL2 ALA
Secretary: Paul Newland ZL2TVV
Net Information: 3710 kHz on Sundays at 2000
Contact Person: John Cutler ZL1VD
Contact Phone Number: (04) 234-7203
Meeting Information: First Tuesday each month (except January) at 1930

43 Waihi & Districts

Physical Address: 5 Martha Street
Postal Address: 5 Martha St, Waihi 3061
Branch Callsign: ZL1QW
President: Peter Anderson ZL1LR
Secretary: Anne Anderson ZL1TAF
Contact Person: Anne Anderson ZL1TAF
Contact Phone Number: (07) 863-7546
Meeting Information: First Wednesday each month (except January) at 1930

44 Matamata Radio Club

Physical Address: Staff Room Matamata District Council, Tainui Street
Postal Address: 74 Tawari Street, Matamata 2271
Branch Callsign: ZL1RF
President: John Rasmussen ZL1AGA
Secretary: Ian Perkins ZL1BFH
Net Information: 3660 kHz on Sundays at 0900
Contact Person: John Rasmussen ZL1AGA
Contact Phone Number: (07) 888-8269
Meeting Information: Second Wednesday each month at 1930

45 Waimarino

Postal Address: 5 Main Road, Waiouru 5458
Branch Callsign: ZL2MG
President: T. L. Garmonsway ZL2AMT
Secretary: G. W. Luscombe ZL2AVL
Contact Person: G. W. Luscombe ZL2AVL
Contact Phone Number: (06) 387-6707
Meeting Information: Irregular. Contact Secretary

46 Wairapa Amateur Radio Club

Physical Address: Hood Aerodrome, Manaia Road
Postal Address: P.O. Box 860, Masterton 5900
Branch Callsign: ZL2OA
President: Paul London ZL2BEF
Secretary: Dan Rodda ZL2 BDK
Net Information: Masterton 680 on Mondays at 2000 except meeting nights
Contact Person: Dan Rodda ZL2BDK
Contact Phone Number: (06) 377 1671
Meeting Information: Second Monday each month (except January) at 1930

47 Waitara Amateur Radio

Physical Address: Manukorihi Park Sports Club, Manukorihi Road
Postal Address: 48 Leslie Street, Waitara 4656
Branch Callsign: ZL2TO
President: Larry Smart ZL2SM
Secretary: Ian Cash ZL2BRA
Net Information: 3666 kHz on Tuesdays at 2000
Contact Person: Larry Smart ZL2SM
Contact Phone Number: (07) 754 7583
Meeting Information: First Sunday each month at 1930

48 Wanganui Amateur Radio Society

Physical Address: Wanganui CDHQ, WDC uilding, Guyton Street
Postal Address: 1 Caversham Road, Wanganui 5001
Branch Callsign: ZL2JA
President: Val Hawtree ZL2FO
Secretary: Gerald Ragan ZL2WAG
Net Information: Each Tuesday 2000 on 690
Contact Person: Graham Hawtree ZL2AHR
Contact Phone Number: (06) 344 7501
Meeting Information: First non-public holiday Monday each month (except January), at 1930 at CDHQ

49 Westland

Postal Address: Coast Road, Barrytown via Greymouth, Greymouth 7801
 Branch Callsign: ZL3GY
 President: Bob McQuarrie ZL3TY
 Secretary: Dave Briggs ZL3VLF
 Net Information: Westland 695 as contact for club members
 Contact Person: Frank Simpson ZL3FMS
 Contact Phone Number: (03) 762 6541
 Meeting Information: First Wednesday each month (except January) at 1930

50 Wellington Amateur Radio Club

Physical Address: Lutheran Hall, 6 King Street, Newtown,
 Postal Address: PO Box 6464, Te Aro, Wellington 6035
 Branch Callsign: ZL2WB
 President: Ron Walls ZL2TT
 Secretary: Martin Millane ZL2DU
 Net Information: 3620 kHz on Sundays at 0930. 146.575 monitored on Sundays
 Contact Person: George Newlands ZL2THQ
 Contact Phone Number: (04) 479 1017
 Meeting Information: Third Tuesday each month (except December) at 1930

51 Eastern Bay of Plenty

Physical Address: Waiewe Street, Hillcrest.
 Postal Address: PO Box 2165, Kopepepe, Whakatane 3080
 Branch Callsign: ZL1AIU
 President: Alan McDonald ZL1PI
 Secretary: Donal Reid ZL1AIF
 Net Information: 146.825 on Mondays at 1930
 Contact Person: Alan McDonald ZL1PI
 Contact Phone Number: (07) 308-7740
 Meeting Information: Second Wednesday each month except January, at 1930

52 Northern Hawkes Bay**53 Te Puke**

Physical Address: State Highway 2, Te Puke Holiday Park
 Postal Address: C/- 31 Karewa Parade, Papamoa, Te Puke 3003
 Branch Callsign: ZL1IB
 President: Neil Rowe ZL3GR
 Secretary: Malcolm Gray ZL1BJG
 Net Information: Tauranga 680 on Wednesdays at 2030. 3600 kHz at 0900 on Sundays
 Contact Person: Malcolm Gray ZL1BJG
 Contact Phone Number: (07) 542-0552
 Meeting Information: Second Saturday each month at 1400, also each Saturday at 1300 at the clubrooms

54 Patea

Postal Address: PO Box 156, Hawera 4800
 Branch Callsign: ZL2QF
 President: Robin Clarkson ZL2AFE
 Secretary: David Robinson ZL2BJI
 Net Information: A call on Egmont 705 will get a response
 Contact Person: David Robinson ZL2BJI
 Contact Phone Number: (06) 278-7486
 Meeting Information: Third Monday each month at 1945 at Salvation Army Lounge

55 Waitomo Radio Club

Physical Address: Thomson Avenue,
 Postal Address: 15 Frederick Street, Otorohanga 2564
 Branch Callsign: ZL1IZ
 President: Eric Carter ZL1IM
 Secretary: Ihian Howitt ZL1BZ
 Net Information: 3850 kHz on Mondays at 2000. Wai tomo 7375 on Sundays at 0900
 Contact Person: Ihian Howitt ZL1BZ
 Contact Phone Number: (07) 873-7349
 Meeting Information: First Thursday each month (except January) at 1930

56 Christchurch West Amateur Radio Club

Physical Address: Auburn Park, Upper Riccarton
 Postal Address: C/- PO Box 31-095, Ilam, Christchurch 8030
 Branch Callsign: ZL3VV
 President: Harry Brown ZL3LP
 Net Information: Each Sunday at 2000 on 147.050
 Contact Person: Des Borgfeldt ZL3ACS
 Contact Phone Number: (03) 349-9705
 Meeting Information: Fourth Tuesday each month at 1930. "Free 'n' Easy" second Wednesday each month at 1330. "Radio night" second Tuesday each month at 1930

57 Tokoroa

Physical Address: Ireland Reserve, Baird Road
 Postal Address: Ireland Reserve, Baird Road, Tokoroa 2392
 Branch Callsign: ZL1AQR
 President: Roger Simmonds ZL1UTW
 Secretary: Erwin Penwarden ZL1TDV
 Contact Person: Erwin Penwarden ZL1TDV
 Contact Phone Number: (07) 886 7675
 Meeting Information: Third Monday each month (except December and January) at 1930

58 Helensville

In Recess

59 Mangakino

In Recess

60 Taupo

Physical Address: A. C. Reserve, A.C. Baths Avenue
 Postal Address: C/- 40 Oregon Drive, Taupo 2730
 Branch Callsign: ZL1BCO
 President: Graeme Frederick ZL1BU
 Secretary: Ray Morrison ZL2JE
 Net Information: Taupo 675 on Mondays at 1930
 Contact Person: Graeme Frederick ZL1BU
 Contact Phone Number: (07) 378-0553
 Meeting Information: First Thursday each month at 1930

61 Central Otago

Physical Address: Alexandra Fire Station, Centennial Avenue
 Postal Address: 83 Russell Street, Alexandra 9181
 Branch Callsign: ZL4OO
 President: Peter Leigh ZL2APO
 Secretary: Wattie Beveridge ZL4ST
 Contact Person: Russell Baird ZL4DJ
 Contact Phone Number: (03) 448-9363
 Meeting Information: Fourth Thursday each month (except December) at 2000

62 Reefton-Buller

Physical Address: 61 Wakefield Street
 Postal Address: C/- Waimangaroa Post, Via Westport, Westport 7621
 Branch Callsign: ZL3BRC
 President: Rod Sudlow ZL3ULR
 Secretary: Jeanette Croker ZL3TCJ
 Net Information: 3620 kHz on Sundays at 2000
 Contact Person: Dave Oates ZL3MF
 Contact Phone Number: (03) 789-8127
 Meeting Information: First Monday (second Monday if public holiday) each month (except January) at 1930 at 61 Wakefield Street

63 Upper Hutt

Physical Address: City Council Yard, Park Street, Upper Hutt
 Postal Address: PO Box 40-525, Upper Hutt 6415
 Branch Callsign: ZL2VH
 President: Neil Gibbons ZL2TNG
 Secretary: Joe Reed ZL2AH
 Net Information: Climie 730 on Sundays at 1930
 Contact Person: Neville Copeland ZL2AKV
 Contact Phone Number: (04) 528-2170
 Meeting Information: Second Sunday each month at 1930 (except January). Informal every Friday night

64 North Otago

Physical Address: Car Club Rooms, Stoke Street
 Postal Address: 91 Weston Road, Oamaru 8901
 Branch Callsign: ZL4OU
 President: Aalan Naish ZL4RB
 Secretary: Bruce Watt ZL4SF
 Net Information: Oamaru 670 on first Monday at 1930
 Contact Person: Isabell Gilchrist ZL4VIG
 Contact Phone Number: (03) 434-5498
 Meeting Information: Second Monday each month (except January) at 1930

65 Papakura Radio Club

Physical Address: Wellington Park, 1R Great South Road
 Postal Address: PO Box 397, Papakura 1703
 Branch Callsign: ZL1VK
 President: Murdoch McDonald ZL1TEY
 Secretary: Celia Reed ZL1ALK
 Net Information: 3755 kHz on Sundays at 0900. 147.325 on Sundays at 0830. 144.210 SSB on Sundays at 1930
 Contact Person: Geoff Reed ZL1AKY
 Contact Phone Number: (09) 298-5271
 Meeting Information: Second Wednesday each month at 1930 and fourth Wednesday at 1330

66 Auckland VHF Group

Physical Address: End of Hazel Avenue (off Dominion Road), Mount Roskill
 Postal Address: PO Box 10-138, Dominion Road, Auckland 1030
 Branch Callsign: ZL1QB
 President: Murray Woodfield ZL1CN
 Secretary: Tim Moore ZL3VTY
 Contact Person: Murray Woodfields ZL1CN
 Contact Phone Number: (09) 479 5677
 Meeting Information: Third Monday each month at 1930

67 Kawerau Amateur Radio & Hobbies Club

Physical Address: Kawerau Pony Club, Tamarangi Drive
 Postal Address: 34 Cobham Drive, Kawerau 3083
 Branch Callsign: ZL1KW
 President: Jim Fitzpatrick ZL1ACM
 Secretary: Bev Osborne ZL1OS
 Contact Person: Graeme Osborne ZL1 ALG
 Contact Phone Number: (07) 323-7515
 Meeting Information: Third Wednesday each month at 1930

68 North Canterbury Amateur Radio Club

Postal Address: C/O PO Box 32, Kaiapoi, Rangiora 8252
 Branch Callsign: ZL3RR
 President: Margaret McChonnachie ZL3UD
 Secretary: John Powell ZL3TRW
 Net Information: 3605 kHz on Monday of meeting at 2030
 Contact Person: John Powell ZL3TRW
 Contact Phone Number: (03) 313 8489
 Meeting Information: Second Thursday of each month (except January) at 1930.
 Meetings alternate between Rangiora and Amberley—contact Secretary for information

69 Kapiti

Physical Address: Cnr Aorangi Road & Tutanekai Street
 Postal Address: PO. Box 166, Paraparaumu 6450
 Branch Callsign: ZL2KB
 President: Dawn Young ZL2AGX
 Secretary: Dennis Young ZL2BF1
 Net Information: Kapiti 685 on Sundays at 2000
 Contact Person: Dawn Young ZL2 AGX
 Contact Phone Number: (04) 298 6664
 Meeting Information: First Wednesday each month (except January) at 2000, and third Wednesday each month except December, at 1400

70 Feilding Radio Club

Postal Address: 19 Campbell Street, Feilding 5600
 Branch Callsign: ZL2AMR
 President: John Poulsen ZL2TCA
 Secretary: Mike Prior
 Contact Person: Paul Harris ZL2WOG
 Contact Phone Number: (06) 323 5524
 Meeting Information: Second Monday each month in ATC rooms Chamberlain Street

71 Rodney

Postal Address: C/- D. Strong , Box 184 Warkworth, Wellsford 1242
 President: J. Goodsir ZL1BJJ
 Secretary: D. J. Strong ZL1WDS
 Net Information: 147.300 on Sundays at 1930
 Contact Person: D. J. Strong ZL1WDS
 Contact Phone Number: (09) 425 7094
 Meeting Information: March, June, September and December. Days advised on Branch net

72 Opotiki Amateur Radio Club

Physical Address: King Street, above State Insurance Office
 Postal Address: P.O. Box 56, Opotiki 3092
 Branch Callsign: ZL1BY
 President: Ernie Rasmussen ZL1KOB
 Secretary: Ernie Rasmussen ZL1KOB
 Contact Person: Steve Winder ZL1 ACE
 Contact Phone Number: (07) 315 7333
 Meeting Information: First Monday each month (except holiday weekends) then held on second Monday, at 0900

73 Northern Wairoa Electronics Club**74 Wellington VHF Group**

Physical Address: Lutheran Church Hall, 6 King Street, Newtown
 Postal Address: P.O. Box 12 -259, Wellington 6038
 Branch Callsign: ZL2WA
 President: Grahame Love ZL2TBK
 Secretary: Peter Cobb ZL3TCE
 Net Information: 147.100 MHz continuous
 Contact Person: Cliff Walker ZL2ALY
 Contact Phone Number: (04) 293 8897
 Meeting Information: Last Thursday each month (except December) at 1930

75 Queenstown

Postal Address: P.O. Box 66, Wakitipu, Queenstown 9195
 Branch Callsign: ZL4NQ
 Secretary: Dave Allison
 Contact Person: Russ Watson
 Contact Phone Number: (03) 442 9374

76 Kaikoura Radio Club

Physical Address: 123 Beach Road
 Postal Address: 145 South Bay Parade, South Bay, Kaikoura 8280
 Net Information: Kaikoura 690 on Sundays at 1930
 Contact Person: Bill Jackson ZL3PZ
 Contact Phone Number: (03) 319-5981
 Meeting Information: Second Monday each month at 1930

77 Te Aroha & Districts Radio Club

Physical Address: CDHQ, Rewi Street
 Postal Address: 12 Emerson Street, Te Aroha 2971
 Branch Callsign: ZL1BSM
 President: Brian McConnochie ZL1BWK
 Secretary: Morris Beale ZL1ANF
 Contact Person: Brian McConnochie ZL1BWK
 Contact Phone Number: (07) 884 8189
 Meeting Information: Third Tuesday in February, April, July and October at 2000

78 Far North Districts Amateur Radio Club

Postal Address: P.O. Box 81, Kaitiaki 0500
 Branch Callsign: ZL1FND
 President: Bob Evans ZL1OT
 Secretary: Russel Shackleton ZL1BQK
 Net Information: 710 Mondays at 2000
 Contact Person: Russell Shackleton ZL1BQK
 Contact Phone Number: (09) 408 0057
 Meeting Information: Listen to Branch net for details

79 Howick & Districts Radio Club

Physical Address: Keali House Uxbridge Road
 Postal Address: 116 Union Road, Howick 1705
 Branch Callsign: ZL1TB
 President: Brian Sowerby ZL1APU
 Secretary: Vern Morris ZL1TDG
 Net Information: 3820 kHz on Sundays at 0900. 147.575 on Thursdays at 2030
 Contact Person: Vern Morris ZL1TDG
 Contact Phone Number: (09) 534 2892
 Meeting Information: First Wednesday each month (except January), at 1930.
 Meeting info may change—refer to Secretary

80 Hibiscus Coast Amateur Radio Club

Physical Address: 479/1 Whangaparaoa Road
 Postal Address: 479/1 Whangaparaoa Road, Whangaparaoa 1463
 Branch Callsign: ZL1FU
 President: John Bell ZL1FB
 Secretary: Albert Kinnell
 Net Information: 3620 kHz on Sundays at 0830. 147.075 on Sundays at 0930
 Contact Person: Eric Mancer ZL1BDO
 Contact Phone Number: (09) 424 8083
 Meeting Information: Third Thursday each month at 1930 (second Thursday in December)

81 Waikato VHF Group

Postal Address: P.O. Box 606, Hamilton 2015
 Branch Callsign: ZL1IS
 President: Noel Rowe ZL3GR
 Secretary: Gavin Petrie ZL1UAB
 Net Information: Waikato 695 on Sundays at 2030
 Contact Person: Gavin Petrie ZL1UAB
 Contact Phone Number: (07) 843 0326
 Meeting Information: February, May, August and November, last Sunday at 1330.
 Listen to net for details

82 Southern Wairapa ARC

Physical Address: St John Building, Lyon Street
 Postal Address: 21 Hardie Grove, Featherston 5952
 Branch Callsign: ZL2BPP
 President: Clem Sutherland ZL2LL
 Secretary: Pauline Carr ZL2QW
 Net Information: Continuously on Southern Wairapa 715
 Contact Person: Clem Sutherland ZL2LL
 Contact Phone Number: (06) 306-9862
 Meeting Information: First Sunday each month (except January, July and August) at 1930

83 Raglan Amateur Radio Club

Physical Address: 25 Bay View Road
 Postal Address: 25 Bay View Rd, Raglan 2051
 Branch Callsign: ZL1CCT
 President: Jack Sanders ZL1AUV
 Secretary: Fred Gilbert ZL1BRU
 Net Information: 146.575 on Wednesdays at 1800. 3620 kHz on Saturdays at 0830
 Contact Person: Fred Gilbert ZL1BRU
 Contact Phone Number: (07) 825 8018
 Meeting Information: By arrangement

84 Bay of Islands Amateur Radio Club

Postal Address: C/- J. N. Cottle, Rainbow Falls, RD 2, Kerikeri., Kerikeri 0470
 Branch Callsign: ZL1BOI
 President: N. Wallace ZL1IU
 Secretary: Jill Cottle ZL1DAJ
 Net Information: 146.750 On Wednesday at 2000
 Contact Person: Jill Cottle ZL1DAJ
 Contact Phone Number: (09) 407 9086
 Meeting Information: First Wednesday each month at 1930

85 Mercury Bay

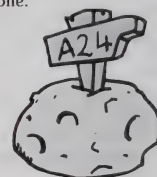
Physical Address: Community Board Rooms (temporary)
 Postal Address: Albert Street, Whitianga
 Branch Callsign: ZL1MBB
 President: Ross Walker ZL1AAF
 Secretary: Graham Mantell ZL3CN
 Net Information: 3707.5 kHz third Wednesday at 1930. Repeaters 7075 and 6975
 Contact Person: Graham Mantell ZL3CN
 Contact Phone Number: (07) 866 2443
 Meeting Information: Second Wednesday each month at 1930

New Zealand Amateur Radio Milestones

compiled by
Alan Wallace
ZL1AMW

- 1923 Regulations for Amateur, Experimental and Broadcasting stations gazetted on January 17.
- By June, nine licences had been issued.
- First amateur radio contact with Australia on April 26, 1923, between Frank Bell 4AA and Chas McClurcan 2CM on 160 m.
- 1924 May 22, Ivan O'Meara 2AC in Gisborne, contacted C. Braggio CB8 in Argentina.
- September 21, 4AA made first two-way contact with 6BCB in North America, on 118 m.
- October 18 6 pm, the first ever direct two-way radio contact with Britain, between Shag Valley 4AA Frank Bell, and London, Cecil Goyder 2SZ, on 92 m.
- 1925 International Amateur Radio Union formed in Paris on April 18, with 23 countries represented. Z4AA Member of Executive Committee. Number of licences reached 100.
- 1926 In Auckland on August 16, the New Zealand Association of Radio Transmitter formed. Subscription 2/6d for six months.
- First portable transmitter/receiver licence to 2GA.
- 1927 International Telecommunication Union Conference in Washington established internationally-agreed frequency bands.
- Sangster Shield contest started.
- 1928 January, first issue of *Break-In*.
- On September 23, Hilton Arthur OZ1AN made first overseas contact on 10 m working Australian station OA3CP in Melbourne.
- First crystal-controlled amateur transmitter in New Zealand built and operated by OZ4AE and OZ4AL.
- 1929 ZL became the amateur radio prefix for New Zealand.
- NZART admitted to IARU.
- Harmonically related bands came into use.
- QSL Bureau handled 390 inward cards at a cost of 13/8d.
- NZART negotiated a reduction in licence fee from £2/2/- to £1/10/-.
- 1930 March 11, 9 pm, ZL1AA made contact with F8AW for first 10 m contact between New Zealand and Europe.
- Myrtle Earland ZL3AG, first YL operator.
- 1931 February 3, Napier Earthquake—the genesis of AREC.
- QSL Bureau handling outward cards at 1d each within New Zealand and 1d each overseas.
- 1932 March 6, first AREC Field Day.
- Radio regulations gazetted, increase in morse test speed to 12 wpm.
- 1933 NZART log book available at 1/6d.
- Official broadcasts resumed at 15 wpm.
- 1934 Two-way aeronautical mobile contact made on 5 m (60 MHz) between ZL4BV and ZL4CA.
- NZART became an Incorporated Society.
- 1935 TV experiments authorized on the 5 m band and on wavelengths below 1 m.
- ZL2RC and ZL2OG communicated over a 8.5 mile path on 5 m.
- VK/ZL/OC contest started.
- 1936 First E-M-E attempts, on 5 m using ICW.
- 1938 First TV article published in *Break-In*.
- 1939 World War II Closed down amateur radio for the duration.
- Break-In* published in cyclo-styled form throughout.
- 1945 December 8, 7.30 p.m. "H Night". Amateur radio in New Zealand resumed on 3.5 to 3.96 MHz and 58.5 to 60 MHz only. Morse test 15 wpm.
- 1946 Memorial Contest started.
- 50 to 54 MHz made available.
- Call Book included in NZART subscription as service to members.
- Official broadcasts by ZL2IY commenced.
- 1947 First two-way contact across Cook Strait on 50 MHz, 50 MHz record made by ZL1HY and ZL4BK at 635 miles.
- 1948 First article on SSSC (SSB) in *Break-In*.
- First contacts on 2400 MHz, by ZL4BP and ZL4DH.
- First two-way trans-Tasman contacts on 50 MHz.
- 1949 The Maori language accepted as plain language for amateur radio.
- Name of REC changed to Amateur Radio Emergency Organization (AREO) but changed almost immediately to Amateur Radio Emergency Corps (AREC).
- 144 to 148 MHz made available.
- 144 MHz record contact by ZL3AQ and ZL3JX at 54 miles.
- World record 50 MHz contact between ZL4GY and USA.
- 1951 ZL2ACB and ZL3LE make the first inter-district contact on 144 MHz.
- World record 144 MHz contact, 1340 miles between ZL3AR and VK2AH.
- 1952 Frequency Measuring Contest started.
- National Field Day started.
- First SSB transmitters built by and two-way contacts made by ZL1AU, ZL1QS, and ZL4AE.
- First ZL2 to ZL4 contact on 2 m between ZL2SM and ZL4BN.
- 21 to 21.45 MHz available.
- Examination became 50 multiple choice questions.
- 1953 420 MHz record contact of 50 miles between ZL3AR and ZL3AQ.
- 1954 First two way contact on 10 GHz, between ZL2AKP and ZL2GQ.
- First transistor articles in *Break-In*.
- First transistorized transmitter, on 160 m by ZL4GP.
- Foreign languages permitted as plain language for amateur radio.
- 1956 First two-way RTTY contact between New Zealand ZL1WB and USA W0BP.
- 1958 On-air demonstration of 405 line TV on 420 MHz by ZL2APC.
- 1959 Midnight January 31, 50 to 51 MHz withdrawn for use for Channel 1 TV.
- 1960 ZL2GX achieves world first 300 DXCC.
- 1961 OSCAR-1 launched December 14, first heard by ZL2HP on December 17.
- 1962 Minimum age for amateur operators' certificate reduced to 14 years.
- Maximum power limit raised from 100 W to 150 W final anode input power.
- WARO formed.
- 1963 Doug Gorman ZL2IY awarded MBE in Birthday Honours for services to Amateur Radio and SAR. Non-morse licence for operation above 144 MHz introduced.
- 1964 First hand-held 2 m solid-state transceiver demonstrated by ZL2APC.
- 1965 First all-electronic scanning receiver demonstrated by ZL2APC.
- First Auckland to South Island QSO on 144 MHz, by ZL1AZR and ZL2ASF.
- 1966 Integrated circuits mentioned in *Break-In*.
- 1967 First mention of FETs in *Break-In*.
- Establishment of beacons on 144, 432 and 1215 MHz approved.
- Slowscan TV on HF bands approved.
- Reciprocal Licensing introduced.
- 1968 IARU Region III Association formed, at Sydney.
- 1969 Use of "Hertz" adopted by NZPO.
- World record E-M-E contact ZL1AZR and SM7BAE on 144 MHz.
- ZM prefix permitted for Cook Bi-centenary.
- ZL1WB appointed command station for Australia-OSCAR-5.
- 1970 First amateur band repeater authorized in Christchurch.
- "Bandplan" Committee formed for 2 m repeaters.
- New New Zealand Radio Regulations introduced. Grades I, II and III replaced the HF permit system.
- First participation in JOTA.
- 1971 2 m FM repeaters established at Whangarei and Waikato.
- ITU Space Conference in Geneva.
- Birth of Amateur Satellite Service.
- Second IARU Region III Conference, in Tokyo.
- 1972 All grades of operators authorized to work through OSCAR-6.
- ZL1WB appointed Command Station for OSCAR-6.
- 1973 Morse speed reduced to 12 wpm for Grade I Operators.
- 1974 ZM prefix permitted for Commonwealth Games.
- First full-colour ATV test-pattern transmitted by ZL2TAR.
- 1975 Third IARU Region III Conference, in Hong Kong.
- 1976 Use of 1803 to 1813 kHz authorized.
- Golden Jubilee of NZART celebrated.
- Sir William Pickering guest speaker at conference.
- Tone digits first used on a repeater, by ZL2AMJ.

- Licence fee raised to \$6.00
First full-colour cover for *Break-In*.
- 1977 Novice grade licence introduced.
- 1978 40 m band extended to 7.3 MHz on a non-interference basis.
Fourth IARU Region III conference, in Bangkok.
Wellington ATV repeater operational.
First two-way contact on 24 GHz, by ZL2ARW and ZL2TRV.
- 1979 Licence fee raised to \$10.00
Hart Postlewaite WB6CQW guest speaker at Conference.
WARC in Geneva, NZART paid for an Amateur Service representative (ZL2AMJ) to attend as a member of the New Zealand delegation.
Term of office of President and Council extended to two years.
50 to 50.15 MHz sharing arrangement introduced.
First Cook Strait crossing by two-way ATV, by ZL2TWM and ZL2ASF.
First 432 MHz E-M-E contact with USA by ZL2BCG, and K5JL.
432 MHz E-M-E record contact between ZL2BCG and I5MSH.
Tasman Sea crossed on 432 MHz, by ZL1TAB and VK2BQJ.
- 1980 World record E-M-E contact between ZL3AAD and DL9KR on 432 MHz.
QSL Bureau handled 247,000 cards at a cost of \$1,300.
Frequency Management Working group established.
Call-signs made permanent for operators moving between radio districts.
- 1981 Conference opened by His Excellency the Governor-General.
ZL0 prefix introduced for visitors to New Zealand.
Random 5-letter groups approved for morse broadcasts from approved stations.
144 MHz bandplan changes to 600 kHz offset for FM repeaters.
First 2 m linear repeater, Dunedin, ZL1BTB and ZL4DO.
- 1982 Licence fee raised to \$13.
10.1 MHz band made available.
Non-morse operators permitted on 51 to 53 MHz band.
Fifth IARU Region III Association Conference, at Manila.
AREC 50th Birthday celebrations.
- Tasman Sea crossed on 1296 MHz by ZL1AVZ and VK2BDN.
- 1983 World Communications Year, ZM prefix used.
Tom Clarkson ZL2AZ received MBE in Birthday Honours List for services to Amateur Radio.
New Frequency Allocation List gives extended band at 1.8 MHz, and new bands above 47 GHz, Grade II and Novice Bands at 28 MHz. CW or Phone, CW identification by RTTY operators no longer a regulatory requirement. Bandplans and emissions for the Amateur Service to regulate.
Packet radio used in New Zealand by ZL1AOX, ZL1WN, ZL1UFX.
World record for packet radio by ZL1AOX and W3IWI on 28 MHz band.
First New Zealand to Chatham Islands contacts on 144 MHz band by ZL4OY/C and ZL3AR.
First ZL-ZL moon bounce contact between ZL3AAD and ZL2AQE on the 432 MHz band on July 16.
A similar feat achieved on August 15 on the 1296 MHz band.
First 610 MHz contact in ZL by ZL2AQF and ZL2ARW on December 3, between Mt. Kaukau and Kakanui.
World Amateur Radio International Conference (WARIC) held in Tokyo.
- 1984 Chatham, Kermadec, and Auckland/Campbell Islands became ZL7, ZL8, and ZL9 respectively.
Review of Amateur Service by NZPO.
Morse transmission authorized for Grade III operators.
First operation from the top of Mt. Cook (ZL3TIG, handheld 2 m).
- 1985 18.068 MHz band made available.
Karl Meinzer DJ4ZC guest speaker at Conference in Christchurch.
Sixth IARU Region III Association Conference, at Auckland, with visit by IARU President and ITU General-Secretary.
IARU Administrative Council met in Auckland.
First FK8-ZL contact on 144 MHz, by ZL2TPY and FK8EM.
- 1986 NZART Official Broadcast simulcasted on 3900 kHz and on Amateur TV for the first time.
Amendment to Radio Regulations from July 21 established General, Limited, and Novice Licence grades. Morse test to include figures. Provisions made for credit for partial exam passes. Power measurement changed to mean/PEP output power rating. Logbook not now obligatory but recommended. Licence fee increased to \$25.00 plus GST.
First 6 m packet radio contact with VK, ZL2BKC and VK2YME.
- 1987 Examination became all multi-choice questions.
Official Broadcast networking on 3900 kHz and VHF repeaters commenced.
New Zealand Post Office replaced on April 1 1987 by the New Zealand Radio Frequency Service as Administration for New Zealand. Licence Fee made \$35 plus GST.
24.89 to 24.99 MHz band available.
610-620 MHz band extended to 622 MHz.
A ZL amateur attends IARU Administrative Council meeting for first time (Netherlands—ZL2AMJ).
National Link-Auckland-Wellington-opened, later extended to Christchurch.
JOTA provisions for Scout and Guide Camp stations during World Jamboree.
First ZL 2304 MHz E-M-E contact, ZL2AQE and W3IWI, world record.
- 1988 New Radio Regulations from January 1 1988.
Third-Party Welfare Traffic permitted for the first time after aftermath of March North Island storm disaster (Cyclone Bola).
W6SAI guest speaker at conference.
80 m Novice band extended to 3.625 MHz.
14-year age limit for Amateur Licence dropped.
April 23, first North Island South Island contact on 610 MHz band, ZL2AJI Mt Robert, ZL2UGR Mt Taranaki.
Seventh IARU Region III Association Conference, Seoul.
First southern hemisphere to northern hemisphere 6 m E-M-E contact, ZL2BGJ and W6JKV.
World record 6 m E-M-E contact, ZL2BGJ and WA4NJP.
- 1989 ZM prefix permitted from June 1989 to end of 1990 for XIV Commonwealth Games and New Zealand's 150th Year Celebrations.
Dan Wilkinson ZL2AB received QSM in Birthday Honours List for services to Amateur Radio.
NZART makes written and verbal submissions to a Parliamentary Select Committee for the first time. (Radiocommunications Bill).
- 1990 New Zealand's Sesqui-Centennial Year, ZM prefix permitted from June 1 1989 to December 31 1990.
The March amateur radio operator's examination—the first run by the NZART Examination Division.
New arrangements and special conditions announced for access to the bands 50–51 MHz and 53–54 MHz.
Novice Grade operators granted access to the 144–148 MHz band.
The band 610–622 MHz realigned to 614–622 MHz.
Access by New Zealand radio amateurs to the band 2.3 to 2.45 GHz restricted to 2.396 to 2.45 GHz.
Access to all HF bands made immediate on gaining a General Grade licence.
Access permitted to the 165–190 kHz and 922–927 MHz bands by New Zealand radio amateurs subject to special conditions.
- 1991 Eighth IARU Region III Conference, at Bandung, Indonesia.
Provisions introduced for visiting operators from countries having no formal reciprocal agreement with New Zealand to now gain permission to operate here.
Call-signs issued to visitors to New Zealand to now be "(home call)/ZL".
- 1992 WARC in Torremolinos, Spain. NZART paid for an Amateur Service representative (ZL2AMJ) to attend as a member of the New Zealand delegation.
Dave Brown ZL1HY hands in his call-sign after becoming No. 1 in the DX world: 375 countries worked out of a possible 377!
NZART permitted to conduct Morse Testing for amateur radio qualifications. ZL1AYN first Morse Examiner.
- 1993 New Zealand General and Limited licences recognized by CEPT (European Conference of Postal and Telecommunications Administrations). First non-CEPT country recognized.
First NZART Morse Tests conducted, at Conference, Pukekohe.



NEW ZEALAND AMATEUR RADIO STATIONS

ZL1 CALLSIGNS

- ZL1AA** Auckland Branch NZART (Inc.), see Branch Directory
ZL1AAA Gordon, B. D., 11 Siota Crescent, Kohimarama, Auckland. 1005
ZL1AAB Cardy, J., 28 City View Terrace, Birkenhead, Auckland. 1310
ZL1AAC Hammond, K. F., 14 Coppelia Avenue, Omokoroa, R.D. 2, Tauranga. 3021
ZL1AAE Yearsley, J. K., R.D. 6, Tauranga. 3021
ZL1AAF Walker, R. L., 128 Buffalo Beach Road, Whitianga. 2856
ZL1AAH Backhouse, R. B., Ararimu Valley Road, R.D. 2, Waimauku. 1250
ZL1AAI De Jong, J. W., P.O. Box 79-311, Royal Heights, Auckland. 1230
ZL1AAJ Williams, H. J., 30 Halberg Street, Glenfield, Auckland. 1310
ZL1AAK Stephens, C. H. L., 56 Karaka Street, Takapuna, Auckland. 1309
ZL1AAL Carruthers, A. J., 61 Drake Street, Howick. 1705
ZL1AAM Scott, P. L., 25 Chatsworth Crescent, Pakuranga. 1706
ZL1AAN Falkner, H. T., 8 Kapai Street, Devonport, Auckland. 1309
ZL1AAO Steel, L. B., 9 Whitworth Road, Rotorua. 3201
ZL1AAQ Palmer, W. J., 168 Birkdale Road, Birkdale, Auckland. 1310
ZL1AAU Elley, Bryce, 11 Carters Road, Amberley. 8251
ZL1AAX Andrews, G. S., 63 Martin Street, Rotorua. 3201
ZL1AAY King, O. L., 8 Gracechurch Drive, Papatotetoe, R.D., Auckland. 1730
ZL1AAZ Pratt, W. R., 2365 Range Road, Papamoa. 3003
ZL1AB North Shore Branch NZART (Inc), see Branch Directory
ZL1ABA Jefferies, S. E., 28 Chorley Avenue, Henderson, Auckland. 1008
ZL1ABC Biddle, R. R., c/- Wesley College, P.O. Box 58, Pukekohe. 1800
ZL1ABD Wise, F. B., 19/14 Royal Road, Massey, Auckland. 1008
ZL1ABG Rae, D., 12 Pirika Street, Dargaville. 0300
ZL1ABI Maggs, A. R., 32 Potter Avenue, Northcote, Auckland. 1309
ZL1ABL Dale, A. J., 61 Rodney Street, Wellsford. 1242
ZL1ABM Humphrey, M. L. G., 1009 Tararu Road, Thames. 2801
ZL1ABN Reay, M. J. F., 16 Priscilla Crescent, Hamilton. 2001
ZL1ABP Rutter, K. L., 707 Richardson Road, Hillsborough, Auckland. 1004
ZL1ABQ McGill, A. K., 15 Manapouri Place, Pakuranga. 1706
ZL1ABR Skinner, R. E., 23 Seddon Avenue, Waihi. 3061
ZL1ABS Sheffield, M. J., 176 Albany Highway, Albany, Auckland. 1310
ZL1ABX Dukes, J. R., 102 Awaruku Road, Torbay, Auckland. 1310
ZL1ABY Hume, D. S., 91 Eivers Road, Whakatane. 3080
ZL1ABZ Johnson, I. P., 36 Cullen Crescent, Tokoroa. 2392
ZL1AC Western Suburbs Radio Club, see Branch Directory
ZL1ACA Whitaker, J. C., Carter Road, Oratia, Auckland. 1007
ZL1ACC Davies, J. H., 22 Harapaki Road, Meadowbank, Auckland. 1005
ZL1ACE Coakley, A. H., 31 Johnston Road, Kawakawa. 0291
ZL1ACD Winder, S. P., 138 Wellington Street, Opotiki. 3092
ZL1ACF Abbott, P. N., 1 Douglas McLean Avenue, Napier. 4001
ZL1ACG Caldwell, E. G., 23 Clyma Place, Massey, Auckland. 1008
ZL1ACH ten Velde, R. J. M., 8 Matipo Place, Tokoroa. 2392
ZL1ACI Pearce, R. E., 2 Leicester Parade, Howick, Auckland. 1705
ZL1ACJ Turner, R. H., 7 Keiss Street, Blenheim. 7301
ZL1ACK Marshall, R. F., P.O. Box 6659, Wellesley Street, Auckland. 1036
ZL1ACL Field, Rina, 11 Featon Road, Waihi. 3061
ZL1ACN Messent, D. L., Main Road, P.O. Box 23, Murupara. 3272
ZL1ACO Grunsing, H. N., 28 Ocean Beach Road, Tairua. 2853
ZL1ACR Ramsay, F. M. (Dr), Private Bag, Totara North. 0471
ZL1ACT Bate, A. M., 7 Finlowe Way, Otumoetai, Tauranga. 3001
ZL1ACU Robson, J. D., 9/130 Boundary Road, Blockhouse Bay, Auckland. 1007
ZL1ACV Twiss, D. G. L., P.O. Box 884, Taupo. 2730
ZL1ACX Rous, B. W., 56 Tamahere Drive, Glenfield, Auckland. 1310
ZL1ACY Billing, C. J., 16 Dobell Road, Whangaparaoa. 1463
ZL1ACZ Williams, B. C., 4 Kay Drive, Blockhouse Bay, Auckland. 1007
ZL1AD Blackett, D. J., 56 Church Street, Northcote, Auckland. 1309
ZL1ADA Baker, J. R. (Mrs), 28 Chorley Avenue, Massey, Auckland. 1008
ZL1ADB Ataya, P. G. E. G., 4204 Great North Road, Henderson, Auckland. 1008
ZL1ADC Meharry, R. B., 111 Clarkin Road, Fairfield, Hamilton. 2001
ZL1ADD Irving, E. B., 26 Dudley Avenue, Huntly. 2191
ZL1ADE Duffy, E. J., 22 Duke Street, Mt Roskill, Auckland. 1004
ZL1ADF Evetts, B., 208 James Street, Whakatane. 3080
ZL1ADG Hunt, C. W., c/- P.O. Box 233, Otorohanga. 2564
ZL1ADI Nichols, D. E. G., 8 School Road, Te Atatu, Auckland. 1008
ZL1ADH Rademacher, C. A., Wrights Road, R.D. 2, Albany. 1331
ZL1ADL Wilkins, D. N., 5 Ethel Street, Sandringham, Auckland. 1003
ZL1ADM de Lacey, N. E., 1 Hall Lane, Frankton, Hamilton. 2001
ZL1ADO Sullivan, J. K., 153 St Heliers Road, St Heliers, Auckland. 1005
ZL1ADP Medland, F. J., 21 Stanmore Bay Road, Whangaparaoa. 1463
ZL1ADQ Lawrence, P., 2/15 Summermist Drive, Northpark, Howick. 1705
ZL1ADR Reinhard (Jnr), P. A., 560 Church Street, Palmerston North. 5301
ZL1ADS Tibbles, W. J., 19 Kotanui Street, Army Bay, Whangaparaoa. 1463
ZL1ADT Orr, K. R. (Dr), 127 Grafton Road, Grafton, Auckland. 1003
ZL1ADU Beard, L. B., P.O. Box 208, Awanui, Northland. 0552
ZL1ADW Clark, B. E., 88 Lincoln Park Avenue, Massey, Auckland. 1008
ZL1ADX The Church of Jesus Christ of Latter Day Saints Radio Club, P.O. Box 33-342, Takapuna, Auckland. 1332
ZL1ADY Purdie, M. D., 94 Glendale Road, Glen Eden, Auckland. 1007
ZL1AE Croonen, P. W., 630 Kaipaki Road, R.D. 1, Ohaupo. 2452
ZL1AEL Stanley, J. W., P.O. Box 252, Whangarei. 0115
ZL1AF Ogier, I. W., 32 Rangitane Street, Palmerston North. 5301
ZL1AFA James, D. L., 8 Kesteven Avenue, St Heliers, Auckland. 1005
ZL1AFB Offord, J. L., 43 Queens Road, New Plymouth. 4601
ZL1AFC Neighbours, E. R., 20a Seaview Road, Otumoetai, Tauranga. 3001
ZL1AFD Osborne, R., P.O. Box 2098, Tauranga. 3015
ZL1AFE De Renzy, P., Puketutu Road, R.D. 2, Matamata. 2271
ZL1AFF Fleming, J., 43 Burns Street, Leamington, Cambridge. 2350
ZL1AFG Hogg, O. B., 743 Maunganui Road, Mt Maunganui. 3002
ZL1AFJ Phillips, J. F. E., 36 Mt Roskill Road, Mt Roskill, Auckland. 1004
ZL1AFK Welch, D. H., 24 Turanga Road, Henderson, Auckland. 1008
ZL1AFL Flatt, D. A., P.O. Box 1892, Whangarei. 0115
ZL1AFM Bellamy, P. R., 36 Eaton Road, Hillsborough, Auckland. 1004
ZL1AFN Monks, W. J. S., 53 Vernal Street, Hamilton. 2001
ZL1AFO Rogers, G. A., P.O. Box 79, Kaitia. 0500
ZL1AFQ Rosan, D. A. R., P.O. Box 65-147, Mairangi Bay, Auckland. 1330
ZL1AFS Cowley, T. C. M., 850 Beach Road, Waiake, Auckland. 1310
ZL1AFT Walker, K., 28 Darren Crescent, Bucklands Beach, Auckland. 1704
ZL1AFU Murphy, R. J., 19 Litten Road, Howick, Auckland. 1705
ZL1AFV Boyce, A. R., 26 Shakespeare Street, Cambridge. 2351
ZL1AFX Kilsby, M. R., 5 Niagara Crescent, Lynfield, Auckland. 1004
ZL1AFZ McLean, J. P., George Road, R.D. 3, Pahiatua. 5470
ZL1AG Gilbert, L. H., c/- The Meadowbank Home & Hospital, 153 Meadowbank Road, Meadowbank, Auckland. 1005
ZL1AGA Rasmussen, J. W., 65 Smith Street, Matamata. 2271
ZL1AGB Rorke, D., 14 Dysart Road, Tauranga. 3001
ZL1AGC Passau, K. M., P.O. Box 628, Papakura, Auckland. 1730
ZL1AGD Deng, A. G., 65 Orams Road, Manurewa, Manukau City. 1702
ZL1AGG Bycroft, P. E., 253 Shirley Road, Papatotetoe, Auckland. 1701
ZL1AGJ Hobbs, E. A., 1 MacMillan Street, Tauranga. 3001
ZL1AGL Fischer, H. G., 98 Gillies Avenue, Epsom, Auckland. 1003
ZL1AGM Sloane, J. H., 14 Whiteacres Drive, Pakuranga, Auckland. 1706
ZL1AGN Campbell, M. H., Fencourt Road, R.D. 1, Cambridge. 2351
ZL1AGO Williams, I. R., 144 Titirangi Road, New Lynn, Auckland. 1007
ZL1AGP Horwood, Hannah, 233 King Street, Whakatane. 3080
ZL1AGR Cotton, J. K., 13a Gollan Road, Mt Wellington, Auckland. 1006
ZL1AGS Collins, P. E., 185 Victoria Street, Cambridge. 2351
ZL1AGT Taylor, E. R., 18 The Circle, Whangaparaoa. 1463
ZL1AGU Sterling, I. H., 27 Cromwell Street, Mt Eden, Auckland. 1003
ZL1AGV Dixon, L. N., 18 Koru Street, Mangere Bridge. 1701
ZL1AGW McDonald, D. F., 6 Margaret Place, Ha Hei, R.D. 1, Whitianga. 2856
ZL1AGX Clark, A. T., 1/9 Eltham Road, Kohimarama, Auckland. 1005
ZL1AGY Easton, J. A., R.D. 9, Wheki Valley Hill, Whangarei. 0121
ZL1AGZ Delaney, J. D., 41 Birdwood Road, Swanson, Auckland. 1008
ZL1AH Wightman, J. D., 99c Eighth Avenue, Tauranga. 3001
ZL1AHB Cutler, A. D., 7 Eastridge Court, Howick. 1705
ZL1AHC Grayston, G. H., 250 Mangapiko Street, Te Awamutu. 2400
ZL1AHD Franklin, M. J., P.O. Box 252, Albany. 1331
ZL1AHI Randerson, K. D., 12 Montgomery Avenue, Onerahi, Whangarei. 0101
ZL1AHK Tester, W., 48 Pulham Road, Warkworth. 1241

ZL1AHL

ZL1AHL McLellan, G. L., 1 Icarus Place, Rotorua. 3201
ZL1AHM Bell, A. D., 182 Ocean Road, Ohope. 3085
ZL1AHN Milford, R. T., 6/43 Shakespeare Road, Milford, Auckland. 1309
ZL1AHO Sykes, R. J., 263 Shirley Road, Papatoetoe. 1701
ZL1AHP Greendale, L. S., 22 School Road, Pahiia, Postal: P.O. Box 301, Pahiia. 0252
ZL1AHQ Field, George, 11 Featon Road, Waihi, Thames Valley. 3061
ZL1AHR Nolan, J. I., 5/25 South Coast Road, Glen Eden, Auckland. 1007
ZL1AHS Turnwald, T. F., 63 Beach Road, Castor Bay, Auckland. 1309
ZL1AHT Buckland, I. D., 231b Titirangi Road, Titirangi, Auckland. 1007
ZL1AHU Seakins, P. J., 99 Exmouth Road, Northcote, Auckland. 1309
ZL1AHW Hoban, R. P., 462 Kaitemako Road, R.D. 5, Welcome Bay, Tauranga. 3021
ZL1AHX King, A. M., 36 Flaxdale Street, Birkdale, Auckland. 1310
ZL1AHZ Kidd, B. F., Addison Road, Parua Bay. 0250
ZL1AI Badman, R. G., 146 Totara Drive, Pukete, Hamilton. 2001
ZL1AIB Morris, N. C., Unit 3, 659 Mt. Albert Road, P.O. Box 24-139, Royal Oak, Auckland. 1030
ZL1AIC Dewar, Dave, 6 Syntax Place, Conifer Grove, Takanini. 1702
ZL1AID Leng, W. K., 36 Great South Road, Papatoetoe. 1701
ZL1AIF Reid, D. M., 123 McCoy Road, R.D. 2, Opatiki. 3092
ZL1AIG Falkner, G. R., 65 Turanga Road, Henderson, Auckland. 1008
ZL1AIH McCormack, R. K. F., Vivian Bay, Kawau Island, Postal: Private Bag 923, Warkworth. 1241
ZL1AII McFarlane, I. R., 18 Hakarimata Road, Ngaruawahia. 2171
ZL1AIJ Blake, C. B., Blackwell Drive, Tryphena, Great Barrier Island. 1240
ZL1AIK Lewis, P. J., Poste Restante, NZ Post, Auckland. 1020
ZL1AIM Keble, S. W., R228, State Highway 2, Bethlehem, Tauranga. 3050
ZL1AIN Frazerhurst, T. L., 81 East Street, Hamilton. 2001
ZL1AIO Rimmer, E. M. (Mrs), 28 Douglas Street, Whakatane. 3080
ZL1AIP Parker, T. H., 18 Darlington Street, Ngatea. 2852
ZL1AIQ Veale, G. A., 74 Don Street, Invercargill. 9501
ZL1AIR Armstrong, B. E., Main Road, P.O. Box 282, Mangonui. 0557
ZL1AIS Dyer, R. J., 16 Blundell Avenue, Kawerau. 3083
ZL1AIU Eastern Bay of Plenty Branch NZART (Inc), see Branch Directory
ZL1AIV Tilsley, D. G., 4 Littlejohn Street, Mt Roskill, Auckland. 1004
ZL1AIX Robinson, W. J., 7 Joseph Banks Terrace, Remuera, Auckland. 1005
ZL1AIJ Lake, P. B., 12 Brasenose Place, Tawa, Wellington. 6006
ZL1AIJ Culloty, H. F. J., 5 May Street, Hillcrest, Hamilton. 2001
ZL1AJC Cummins, Joan, Te Atatu Rest Home, 588 Teasdale Street, Te Awamutu. 2400
ZL1AJD Krippner, F. J., Te Rore, R.D. 6, Te Awamutu. 2400
ZL1AJE Ansell, M. E., 32 Routledge Drive, Glen Eden, Auckland. 1007
ZL1AJF Krippner, J. A., Te Rore, R.D. 6, Te Awamutu. 2400
ZL1AJH Davies, J. W. (Dr), 1 Birkley Road, Bayswater, Auckland. 1309
ZL1AJI Jeffries, A. W., 70 Woodglen Road, Glen Eden, Auckland. 1007
ZL1AJK Wood, W. B., 8 William Souter Street, Forrest Hill, Auckland. 1309
ZL1AJL Johnston, Carol, 6 Syntax Place, Conifer Grove, Takanini. 1702
ZL1AJN Holmes, W. S., R.D. 1, Waiuku. 1852
ZL1AJO Jones, D. A., P.O. Box 70, Pauanui Beach. 2850
ZL1AJP Wilcocks, R. J., 35 Puriri Drive, Kamo, Whangarei. 0101
ZL1AJQ Hogan, A. H., P.O. Box 1497, Taupo. 2730
ZL1AJR Chapman, R., 39a West Tamaki Road, Glen Innes, Auckland. 1006
ZL1AJS Barker, J. A., P.O. Box 59, Leigh. 1240
ZL1AJU Barnard, B. F., 91 Melanesia Road, Kohimarama, Auckland, P.O. Box 25-197, St Heliers, Auckland. 1130
ZL1AJV Irving, P. J., 4 Scott Avenue, Mangere Bridge, Auckland. 1701
ZL1AJW Grant, R. C., 15 Scott Road, Stanmore Bay, Whangaparaoa. 1463
ZL1AJX Cox, J. B., 4/95 Wheturangi Riad, Greenlane, Auckland. 1005
ZL1AJY Barratt, M. P., 6 Brussels Place, Birkenhead, Auckland. 1310
ZL1AK Mitchell, B. A., P.O. Box 7, 12 Ward Street, Waharoa. 2272
ZL1AKA Harris, J. W., 79 Stillwater Crescent, R.D. 3, Silverdale. 1462
ZL1AKB Gillard, M. L. N., 22 Stewart Street, Whakatane. 3080
ZL1AKC Crook, B. W., 3 Icarus Place, Rotorua. 3201
ZL1AKD Clay, W. V., c/- Mrs S Hendriks, 77 Fitzroy Street, Papatoetoe, Auckland. 1701
ZL1AKE Exeter, M. N. L., 5 Dolphin Street, Pakuranga. 1706
ZL1AKI Tait, C. V., Exelby Road, R.D. 9, Hamilton. 2001
ZL1AKJ Studholme, D. L., 22 Anita Avenue, Mt Roskill, Auckland. 1004
ZL1AKK Ellison, C. L., 582/2 Mahoe Street, Te Awamutu. 2400

ZL1AKL Eagle, E. H., 35 Argyll Road, Greerton, Tauranga. 3001
ZL1AKN Fairest, T. R., Tapuwae Road, Poratarao, R.D. 7, Te Kuiti. 2500
ZL1AKO Otto, R. H., Waipapa, R.D. 2, Kerikeri. 0470
ZL1AKP Doar, S. W., c/- Duffill, Watts & King, P.O. Box 652, Kaikohe. 0400
ZL1AKS Wigley, J. N., 43 Ocean View Road, Northcote, Auckland. 1309
ZL1AKT Follett, M. S., 39 Edmund Road, Rotorua. 3201
ZL1AKU O'Donoghue, D. J., 5 Rata Street, Mt Maunganui. 3002
ZL1AKV Bell, D. C., 32 Willis Road, Papakura, Auckland. 1703
ZL1AKW Horne, D. W. J., 3 Vine Avenue, Maungatapu, Tauranga. 3001
ZL1AKX Passau, Merv, Awanui Rise, P.O. Box 628, Papakura. 1730
ZL1AKY Reed, Geoff, 51 Great South Road, Papakura. 1703
ZL1AL Benton, T. J., c/- 3 Sander Rise, New Plymouth. 4601
ZL1ALA Halden, J. E., Bush Road, R.D. 2, Ngatea. 2821
ZL1ALD Smith, D. W., 110 Douglas Street, Whakatane. 3080
ZL1ALE Johnston, Aola, 63 Red Hill, Papakura. 1703
ZL1ALF Gibbs, P. N. (Mrs), c/- New Zealand Post, Taihape. 5457
ZL1ALG Osborne, G. J., 34 Cobham Drive, Kawerau. 3083
ZL1ALH Lochmann, I. G., 19 Hillview Street, Ngaruawahia. 2171
ZL1ALI Lee, A. B. (Ms), c/- 58 Saddleback Rise, Murays Bay, Auckland. 1310
ZL1ALJ Fraser, T. J., 149 Caxton Place, Te Awamutu. 2400
ZL1ALK Reed, Celia, 51 Great South Road, Papakura. 1703
ZL1ALL Young, W. G., 3 Kempthorne Crescent, Kohimarama, Auckland. 1005
ZL1ALM Mutch, J. T., 100b Appenzell Drive, Whakatane. 3080
ZL1ALN Duncan, K. G., 2 Marsh Avenue, Milford, Auckland. 1309
ZL1ALO Giles, P. M., 13 Ozich Avenue, Te Atatu South, Auckland. 1008
ZL1ALP Harding, F. W., 9 Fairlie Grove, Te Puna, R.D. 2, Tauranga. 3050
ZL1ALQ Deverick, E. I., P.O. Box 33-1306, Takapuna, Auckland. 1332
ZL1ALR Kay, S. R., 1a Burwood Crescent, Remuera, Auckland. 1005
ZL1ALS Wylde, J. E., 11 Wai-iti Terrace, Whitianga. 2856
ZL1ALV Ussher, R. R., 837 Beach Road, Browns Bay, Auckland. 1310
ZL1ALW Williamson, J. G., 70 Ngataranga Road, Devonport, Auckland. 1309
ZL1ALX Gubb, G. K., 4/278 Shirley Road, Papatoetoe. 1701
ZL1ALY Matthys, J. K. C., Omarunui Settlement Road, R.D. 3, Napier. 4021
ZL1ALZ Balsillie, John, R.D. 1, Pokeno. 1872
ZL1AM Northland Branch NZART (Inc), see Branch Directory
ZL1AMB Milne, M. B., Fahey Road, R.D., Bombay. 1800
ZL1AMC Zwies, O. H., 232 King Street, Invercargill. 9501
ZL1AME Crook, F. G., 17 Hanlon Crescent, Devonport, Auckland. 1309
ZL1AMF Gosling, K. F., 3 Merton Avenue, Glenfield, Auckland. 1310
ZL1AMG Kirby, E. G., 52 Whitaker Street, Otumoetai, Tauranga. 3001
ZL1AMH Hughes, J. S. P., 63 Watea Road, Torbay, Auckland. 1310
ZL1AMI Jamieson, R. A., Oropi Road, R.D. 3, Tauranga. 3021
ZL1AMJ Saunders, J. R., 116 Lynbrooke Avenue, Blockhouse Bay, Auckland. 1007
ZL1AMK Jensen, E. W., 166 Godley Road, Titirangi, Auckland. 1007
ZL1AML Lawrence, L. J., 28 McCullough Avenue, Mt Roskill, Auckland. 1004
ZL1AMM Murphy, R. E., 2/14 Cradock Street, Avondale, Auckland. 1007
ZL1AMN Johnston, Dave, 63 Red Hill, Papakura. 1703
ZL1AMO Wright, R. W., 28 Chorley Avenue, Massey, Auckland. 1008
ZL1AMQ Male, F. G., 67 Waipuna Road, Mt Wellington, Auckland. 1006
ZL1AMR Lindsay, I. M., 1/131 Botany Road, Howick, Auckland. 1705
ZL1AMT Moore, D. A., 2 Kanuka Way, Albany, Auckland. 1310
ZL1AMU Jury, R. B., Cove Road, Waipu. 0254
ZL1AMW Wallace, A., 20 Lorne Street, Hamilton. 2001
ZL1AMX Daniel, G. G. (Mrs), Whangamau Street, R.D. 3, Whangarei. 0121
ZL1AMY Fletcher, I. G., 248 East Coast Road, Takapuna North, Auckland. 1309
ZL1AMZ Glendinning, T., 16 Meadow Drive, Whitianga. 2856
ZL1AN Bold, G. E. J., 15 Kauri Road, Birkenhead, Auckland. 1310
ZL1ANA Barker, J. R. (Mrs), 26 Lyndhurst Street, Te Atatu South, Auckland. 1008
ZL1AND Turner, A. B., 7 Acmena Lane, Pakuranga, Auckland. 1706
ZL1ANE Gingles, J. C., Te Maika Road, Ngunguru, R.D. 3, Whangarei. 0121
ZL1ANF Beale, W. M., 12 Emerson Street, Te Aroha. 2971
ZL1ANG Frazerhurst, L. F., 81 East Street, Hamilton. 2001
ZL1ANH Hunt, Graeme, 30 Grande Vue Road, Kawaha Point, Rotorua. 3201
ZL1ANI Bell, K. A., 62b Eden Terrace, Kamo, Whangarei. 0101
ZL1ANJ Ellis, J. M., 3 Hawera Road, Kohimarama, Auckland. 1005
ZL1ANK Daniel, J. E., Whangamau Street, R.D. 3, Whangarei. 0121
ZL1ANL Smith, I. G., 20 Kirk Street, Whakatane. 3080
ZL1ANM Barnett, Neil, 32 Marlborough Avenue, Glenfield, Auckland. 1310

ZL1ANN Hotson, A. (Mrs), 11 Boss Road, Kawerau. 3083
ZL1ANO Matsui, Y., 1/4 Henley Road, Mt Eden, Auckland. 1003
ZL1ANP Parsons, Norma, 509/1 Mutu Street, Te Awamutu. 2400
ZL1ANV Creed, R. M., 38 Hollywood Avenue, Titirangi, Auckland. 1007
ZL1ANW Dixon, A. W., 2/34 Wedgewood Avenue, Mangere East, Auckland. 1701
ZL1ANX Reid, A. A., 62a Puke Road, Paeroa. 2951
ZL1ANY Pearce, S. G., 44 Kowhai Street, Hamilton. 2001
ZL1AO Allison, J. N., P.O. Box 185, Taumarunui. 2600
ZL1AOA Whitney, J. R., 35b Wallis Street, Raglan. 2051
ZL1AOB Harrop, G. N., 8 Waingaro Road, Ngauruawhia. 2171
ZL1AOC Henderson, H. R. T., 11 Chesley Place, Bucklands Beach, Auckland. 1704
ZL1AOD Byrnes, Ces, 31 Rosehill Drive, Papakura. 1703
ZL1AOE Gillgren, S. J., 7 Graham Road, Gisborne. 3801
ZL1AOF King, J. L., 26 Pouwhare Street, Whakatane. 3080
ZL1AOG Hastings, W. W., 35 Dundas Road, Whangarei. 0101
ZL1AOH Stewart, M. G., 4 Page Place, Hamilton. 2001
ZL1AOI Trethowen, V. I., 1/22 Blockhouse Bay Road, Avondale, Auckland. 1007
ZL1AOJ Robinson, J. R., 204a McKay Drive, Temple View, Hamilton. 2001
ZL1AOK Handisides, W. S., 117 East Coast Road, Milford, Auckland. 1309
ZL1AOL Shacklock, F. W., 14 Paparoa Road, Howick. 1705
ZL1AOM Brown, M. W., 290 Douglas Avenue, Te Awamutu. 2400
ZL1AON Edginton, K. S., 69 East Street, Hamilton. 2001
ZL1AOO Holley, W., 16 Ashlynnne Avenue, Papatoetoe, Auckland. 1701
ZL1AOP Frewin, H. G., 42 Walmsley Road, Waihi. 3061
ZL1AOT Margison, I., 3/28 Towai Street, St Heliers, Auckland. 1005
ZL1AOU Southon, H. J., c/- Bethlehem Post Office, Tauranga. 3050
ZL1AOV Matheson, Joyce, Mata Road, R.D. 1, Kohukohu. 0570
ZL1AOW Frankham, D. W., 3a Kaurilands Road, Titirangi, Auckland. 1007
ZL1AOX Ashley, I. T., 5 Willoughby Avenue, Howick. 1705
ZL1AOY Young, I., 15 Glenfell Road, Mt Eden, Auckland. 1003
ZL1AOZ Mackay, W. J. (Dr), 49 Gladstone Road, Parnell, Auckland. 1001
ZL1APA Hardy, R., P.O. Box 152, Pauanui Beach. 2850
ZL1APB McDonald, R. W., 109 Kauri Road, Whenuapai. 1250
ZL1APC Chaytor, J. M., 96a Vale Street, Otumoetai, Tauranga. 3001
ZL1APD Richardson, W. J., 57 Esk Street, Tauranga. 3001
ZL1APE Corbett, A. B. S., 10 Roseberry Avenue, Birkenhead, Auckland. 1310
ZL1APF Bateman, T. L., 109 Lambert Street, Thames. 2801
ZL1APG Perston, K. J., 49 Massey Street, Kawerau. 3083
ZL1APH Dittmer, C. R., 31 George Street, Morrinsville. 2251
ZL1API Hendrie, J. G., 22 Trias Road, Glenfield, Auckland. 1310
ZL1APJ Jessen, R., 156 Tamamutu Street, Taupo. 2730
ZL1APK Turvey, G. R., R.D. 2, Opotiki. 3092
ZL1APL Tague, T. F. E., 2/15 Birdwood Crescent, Parnell, Auckland. 1001
ZL1APM Bowers, J., 104 Hinemoa Avenue, Taupo. 2730
ZL1APO Penney, G. A., 6 Meadow Drive, Whitianga. 2856
ZL1APP Haysmith, C. A., 300 Coast Highway, R.D. 1, Kaukapakapa. 1250
ZL1APQ Crook, N. W. W. G., 89b Centreway Road, Hibiscus Coast, Orewa. 1461
ZL1APS Browne, N. H., 27 Vivian Drive, Omokoroa Beach, Tauranga. 3050
ZL1APT Jones, Barry, Flat 2, Nae Nae Court., 185/9 Nae Nae Road, Lower Hutt. 6009
ZL1APU Sowerby, B. W., 42 Cheriton Road, Howick. 1705
ZL1APV Fisher, J. R., 35 Shoreham Street, Blockhouse Bay, Auckland. 1007
ZL1APX Duncan, S., 208 Ohaupo Road, Glenview, Hamilton. 2001
ZL1APY Harris, L. M., 12 George Street, Waiuku, South Auckland. 1852
ZL1APZ Franks, R. A., Scotsmans Valley Road, R.D. 1, Morrinsville. 2251
ZL1AQA Hood, W. F., c/- J.P. Hamilton, 71 Burwood Road, Matamata. 2271
ZL1AQC Sinclair, V. A., 40b Frobisher Street, Island Bay, Wellington. 6002
ZL1AQD Crossman, V. T., 18 Tupaea Place, Tauranga. 3001
ZL1AQE Wright, D. P., 3 Tamatea Drive, Snells Beach, Warkworth. 1240
ZL1AQJ Wrigley, J. S., 5 Derwent Street, Western Springs, Auckland. 1002
ZL1AQL Hintridge, M. F., 11b Clare Street, Cambridge. 2351
ZL1AQM Kendall, J. D., 16 Ferguson Avenue, Greenlane, Auckland. 1005
ZL1AQO Shepherd, G. W., 1/88 Florence Avenue, Orewa. 1461
ZL1AQR Tokoroa Branch NZART (Inc), see Branch Directory
ZL1AQS Tokoroa, J. E., Paparimu, R.D. 3, Papakura. 1730
ZL1AQT Smith, A. G., 17 Raniera Place, Rotorua. 3201
ZL1AQU Boyer, C. A., 311 Pakuranga Road, Pakuranga. 1706
ZL1AQV Barclay, S. N., P.O. Box 8618, Symonds Street, Auckland. 1035

ZL1AQX Toomey, A. H., 39a MacLeans Road, Bucklands Beach, Auckland. 1704
ZL1AQY Knaggs, G. R., 31 Henderson Crescent, Tauranga. 3001
ZL1AR Walsh, J. S., Maungatapu Road, Glenfalls, R.D. 1, Morrinsville. 2251
ZL1ARA MacDonald, A. D., 82 Dinsdale Road, Hamilton. 2001
ZL1ARB Smith, P. L., 56 Hobsonville Road, West Harbour, Auckland. 1008
ZL1ARC McKenzie, C. J. C., P.O. Box 22-725, Otahuhu, Auckland. 1133
ZL1ARD Duncan, L. E., 14 Cowley Drive, Temple View, Hamilton. 2001
ZL1ARE Liefteing, E. M., R.D. 3, Paranui, Kaitiaki. 0500
ZL1ARF Wallis, B. S., 9 Verrans Road, Birkenhead, Auckland. 1310
ZL1ARG Millar, R. W. K., Mullet Point, R.D. No. 2, Warkworth. 1241
ZL1ARH Rowe, P. R., 48a Paraonui Drive, Tokoroa. 2392
ZL1ARJ Wadey, A. P., Karaka Road, Parakao, Whangarei. 0250
ZL1ARK Simpson, Anne, 49 George Point Road, Onerahi, Whangarei. 0101
ZL1ARL Neno, M. R., 226 Dickson Road, Papamoa Beach. 3003
ZL1ARM Matthews, J. C. H., 1 Mayfair Crescent, Mairangi Bay, Auckland. 1310
ZL1ARN Brown, J. T., 32 English Street, Hamilton. 2001
ZL1ARQ Dunhill, I. H., 19 Goring Road, Mt Albert, Auckland. 1003
ZL1ART Allen, A. W. (Ms), Main Road, R.D. 1, Broadwood, Northland. 0571
ZL1ARW Forsyth, J. T., 21 Chipping Dale, Mangere Bridge, Auckland. 1701
ZL1ARX Wright, P. W. J., 8 Kinder Street, Taupo. 2730
ZL1ARY Chandler, R. W., 36 Eastern Beach Road, Bucklands Beach. 1704
ZL1ARZ Gibbs, F. I., 122 Fairview Place, Te Puke. 3071
ZL1AS Litten, R. J., 400 Onemana Drive, Onemana, Whangamata. 3062
ZL1ASB Blake, J. J., 32 Kiwi Road, Point Chevalier, Auckland. 1002
ZL1ASC McCann, C. S., 45a Braemar Road, Rothesay Bay, Auckland. 1310
ZL1ASD Bayley, E., 11 Trimmer Terrace, Papatoetoe. 1701
ZL1ASE Highley, F. K., 31 Rangatira Drive, Mangakino. 2391
ZL1ASF Parkinson, D. A. J., 22 Hiwihau Place, Glenfield, Auckland. 1310
ZL1ASG Sanderson, J. B., P.O. Box 25, Whangarei. 0115
ZL1ASK Klinac, T. J., 45 Central Avenue, Papatoetoe, Auckland. 1701
ZL1ASL Rimmer, K. S., 65 Bongard Street, Tauranga. 3001
ZL1ASM Keenely, R. D., 1119 Kihikihiki Road, Te Awamutu. 2400
ZL1ASN Adams, R. E. V., 21 Ashby Avenue, St Heliers, Auckland. 1005
ZL1ASO Grayson, Ian, P.O. Box 517, Papakura. 1730
ZL1ASP Abbott, R. F., 6 Longview Drive, Papamoa. 3003
ZL1ASR Rowe, A. S., Unit 1/23 Birman Close, Bucklands Beach, Auckland. 1704
ZL1ASU Little, D. C., 25 Marelenn Drive, Red Beach, Orewa. 1461
ZL1ASV Phillips, R., 11a Agincourt Street, Glenfield, Auckland. 1310
ZL1ASW Cambridge Amateur Radio Club, see Branch Directory
ZL1ASY McCaughey, J. D., R.D. 1, Russell. 0255
ZL1ASZ Anderson, A. N., 3 McKenzie Road, Mangere Bridge, Auckland South. 1701
ZL1AT Redmond, N. P., 199 Waimumu Road, Massey, Auckland. 1008
ZL1ATA Brown, K. I., c/- R & L Brown, Wilks Road, R.D. 4, Albany, Auckland. 1331
ZL1ATB Leitch, D. A., 1/10 Blockhouse Bay Road, Avondale, Auckland. 1007
ZL1ATC Jamieson, A. S. (Miss), 99 Frederick Street, Hillsborough, Auckland. 1006
ZL1ATE Babich, A. T., 48 Citrus Avenue, Waihi Beach. 3060
ZL1ATG Geddes, G. D. S., Reinga Road, Kerikeri. 0470
ZL1ATI Ward, C. J., 30 Eskdale Road, Birkdale, Auckland. 1310
ZL1ATJ Cowell, R. E., 14 Bosnyak Drive, Te Atatu South, Auckland. 1008
ZL1ATK Millar, T. R. G., 25 Moana Crescent, P.O. Box 34, Mangakino. 2391
ZL1ATL Park, R. J., 205 Hape Road, Thames. 2801
ZL1ATM Barrett, N., 42b Scott Avenue, Mangere Bridge, Auckland. 1701
ZL1ATQ Salter, R. T., Brind Road, Russell. 0255
ZL1ATS Hoyle, R. P., 54 Waitete Road, Waihi. 3061
ZL1ATU Hayhurst, K. W., 204 Mill Street, Thames. 2801
ZL1ATV Robertson, N. L., 23 Tauhara Street, Green Bay, Auckland. 1007
ZL1ATW Meenagh, M. B., 223 Te Tono Street, Te Awamutu. 2400
ZL1AU Scouse, P. N., 17 Calluna Crescent, Totara Heights, Manukau. 1701
ZL1AUA Wilson, B. E., 10a Jaemont Avenue, Te Atatu South, Auckland. 1008
ZL1AUD Diamond, C. S., Waiwhatawhata, R.D. 3, Kaikohe. 0400
ZL1AUG Street, G. H., 4 Emory Drive, Takanini, Auckland. 1702
ZL1AUH Murray, N. V., Counter Mail, Waiuku Post Office, Waiuku. 1852

ZL1AUI

ZL1AUI Banks, R. S., 34 Taupo Bay Road, Taupo Road, R.D. 1, Mangonui. 0557

ZL1AUJ Warman, R. W., 6 Hospital Road, P.O. Box 135, Te Kopuru. 0356

ZL1AUK Hill, M. J., 119 Sutherland Road, Otumoetai, Tauranga. 3001

ZL1AUL Loiacono, Vito, 11 Sheridan Lane, Freeman's Bay, Auckland. 1001

ZL1AUM Maddock, C. N., 75a Methuen Road, Avondale, Auckland. 1007

ZL1AUO Forrester, Trevor, 254 Stokes Valley Road, Stokes Valley. 6008

ZL1AUQ Pople, D. A. O., 19 Kingdale Road, Henderson, Auckland. 1008

ZL1AUS Insley, J. F., 1 Tudor Rise, Whakatane. 3080

ZL1AUU White, J. H. S., 104 Third View Avenue, Beachlands, Auckland. 1705

ZL1AUV Sanders, J. G., Greenslade Road, P.O. Box 81, Raglan. 2051

ZL1AUW Wooller, A. M., 40 Windsor Street, Glenfield, Auckland. 1310

ZL1AUX Greaves, G. J., 40 Pindima Circle, Papatoetoe, Auckland. 1701

ZL1AUY Burkinshaw, D. E., 30 Tiroroa Avenue, Te Atatu South, Auckland. 1008

ZL1AUZ Hawkins, C. R., 56 Pine Avenue, Hamilton. 2001

ZL1AV Tremayne, D. T., Spencer Road, Lake Tarawera, P.O. Box 1231, Rotorua. 3215

ZL1AVD Bell, D. G., 48 Dundee Place, Blockhouse Bay, Auckland. 1007

ZL1AVE Atchinson, D. R., 783 Great South Road, Papatoetoe. 1701

ZL1AVG Johnson, P. R., 22 Huia Street, Rotorua. 3201

ZL1AVH Alder, S. H., 195 St Heliers Bay Road, St Heliers, Auckland. 1005

ZL1AVI Kyle, B. V., 76 St. Andrews Road, Epsom, Auckland. 1003

ZL1AVJ Harper, M. J., 34 Tuatara Drive, Kamo, Whangarei. 0101

ZL1AVK Ruffell, W. L., 8 St Aubyn Street, Devonport, Auckland. 1309

ZL1AVL Manning, A. J., CMB B27, R.D. 1, Huntly. 2191

ZL1AVO Robertson, K. S., 249b Edmonton Street, Te Atatu South, Auckland. 1008

ZL1AVP Tweedie, L. E., 5 Quebec Road, Forrest Hill, Auckland. 1309

ZL1AVQ Auckland University Amateur Radio Club, c/- Auckland University Students Association, Private Bag 92-019, Auckland. 1020

ZL1AVR Rowe, J. P., 100 Totara Close, Thames. 2801

ZL1AVU Garlick, C. W., 4 James Place, Papakura. 1703

ZL1AVV McFayden, E. J., 39 Kahu Street, Rotorua. 3201

ZL1AVW Wing, B. E., Pungaere Road, R.D. 2, Kerikeri. 0470

ZL1AVY Tennent, D. R., 1/151 Farquhar Road, Glendene, Auckland. 1008

ZL1AVZ Ryall, B. J., 195 Te Atatu Road, Te Atatu South, Auckland. 1008

ZL1AW Bailey, C. A., 261 Papamoa Beach Road, Papamoa. 3003

ZL1AWA Voss, A., 28 Matipo Street, Taupo. 2730

ZL1AWC Thawites, D. F., 7a Imogene Way, Bucklands Beach, Auckland. 1704

ZL1AWD Parsons, J. N., 14 Crew Street, Gore. 9700

ZL1AWE Nicholson, A. J., 21 Egremont Street, Belmont, Auckland. 1309

ZL1AWF Sexton, E. A., Paparimu, R.D. 3, Papakura. 1730

ZL1AWI Bott, A. G., Woodstock Avenue, Mackaytown., P.O. Box 28, Karangahake, Paeroa. 2951

ZL1AWL Holland, A. D., 66 Old Railway Road, R.D. 2, Kumeu. 1250

ZL1AWM Holland, Judith, 66 Old Railway Road, R.D. 2, Kumeu. 1250

ZL1AWN Erasmus, J. D., 7 Awatere Place, Snells Beach, Warkworth. 1240

ZL1AWO Pepperell, B. F., 17 Armagh Street, Hamilton. 2001

ZL1AWP Dennison, A. S., 20 Matahiwi Road, R.D. 2, Te Puna, Tauranga. 3050

ZL1AWR Goodacre, H. W., Pickering Road, R.D. 3, Hamilton. 2021

ZL1AWS O'Connell, K. D., 97 Malfoy Road, Rotorua. 3201

ZL1AWU Taylor, R. J., c/- Cheryl Tomich, Challenge Realty, P.O. Box 26-006, Epsom North, Auckland. 1030

ZL1AWV Ison, H. D. S., 80 Harbour View Road, P.O. Box 164, Leigh. 1240

ZL1AWW Welford, G. H., 8b Walpole Avenue, Manurewa. 1702

ZL1AWX Jillings, M. A., 71 Hutchinson Road, Howick, Auckland. 1705

ZL1AWZ Leitch, T. G., 38 David Street, Morrinsville. 2251

ZL1AX Hope, Ian, 20 Kurupae Road, Taupo. 2730

ZL1AXA Burgess, G. W., 34 Booralee Avenue, Howick, Auckland. 1705

ZL1AXB Murdoch, P. J., 183 Glengarry Road, Glen Eden, Auckland. 1007

ZL1AXD Melhuish, L. D., 110 Golf Road, Titirangi, Auckland. 1007

ZL1AXE Spackman, M. L. (Rev), The Vicarage, 20 Church Street, Devonport, Auckland. 1309

ZL1AXF McRae, E. D., 4 Nottingham Road, Onerahi, Whangarei. 0101

ZL1AXG Woods, M. H., 80 Beacon Hill Road, Seatoun Heights, Wellington. 6003

ZL1AXI Foote, J. R., P.O. Box 4092, Kamo, Whangarei. 0131

ZL1AXJ Waring, B. A., 57 Reelick Avenue, Pakuranga, Auckland. 1706

ZL1AXL Roberts, B. L., 1/23 Martin Avenue, Remuera, Auckland. 1005

ZL1AXN Arderton, T. E., 87 Woolfield Road, Papatoetoe, Auckland. 1701

ZL1AXO Bareman, K., 17 Matipo Road, Te Atatu North, Postal: P.O. Box 45-055, Te Atatu, Auckland. 1230

ZL1AXQ Hardwick, D. B., 482 Period Road, R.D. 2, Matamata. 2271

ZL1AXS Griffin, P. J., 44 Waimarie Road, Whenuapai Village, Auckland. 1250

ZL1AXT De Luca, B. C., 20 Gwilliam Place, Freemans Bay, Auckland. 1001

ZL1AXU Orchard, M. P., P.O. Box 190, Whakatane. 3080

ZL1AXV Richardson, Ken, 4 Redcrest Avenue, Papakura. 1703

ZL1AXX Smith, R. I., 540 Don Buck Road, Massey, Auckland. 1008

ZL1AXY Hjorring, B. G., 48 Smythe Road, Henderson, Auckland. 1008

ZL1AXZ Sample, K. W., 46a Sunrise Avenue, Mt Maunganui. 3002

ZL1AY Allen, C. W., R.D. 1, Broadwood, Northland. 0571

ZL1AYA D'Arcy, A. E., 2/41 East Coast Road, Milford, Auckland. 1309

ZL1AYB Bowkett, J. A., 90 Cedar Drive, Paraparaumu Beach. 6450

ZL1AYC Shipman, N. J., 56 Dale Road, Raumati South, Wellington. 6450

ZL1AYD Thomson, M. D., 151a Milford Road, Milford, Auckland. 1309

ZL1AYE Midwinter, G. E. D., Otaika Valley Road, R.D. 10, Whangarei. 0121

ZL1AYF Price, D. A., P.O. Box 2304, Rotorua. 3215

ZL1AYH Wallace, A. D., c/- J. Wallace, 1346 Whangaparaoa Road, Whangaparaoa. 1463

ZL1AYI Harris, N. G., 402 Maungatapu Road, Tauranga. 3001

ZL1AYJ Jones, E., 104b Ravenwood Drive, Forrest Hill, Auckland. 1309

ZL1AYL Young, M. G., 2c Market Road, Remuera, Auckland. 1005

ZL1AYM Tennant, C. H., 8 McLeod Street, Weymouth, Auckland. 1702

ZL1AYN Lowe, Bob, 42a Armagh Terrace, Mcllwaine Place, Marton. 5460

ZL1AYO Seaman, H. A., 86 Taylor Street, Blockhouse Bay, Auckland. 1007

ZL1AYQ Mairdona, J. D., P.O. Box 702, Rotorua. 3215

ZL1AYS Stewart, R. W., 46a Armadale Road, Remuera, Auckland. 1005

ZL1AYU Thorley, A., 11 Queen Street, Waihi. 3061

ZL1AYV Dingley, M. J., 2139 Great North Road, Avondale, Auckland. 1007

ZL1AYW Speedy, S. L., 4a Windermere, 6 The Promenade, Takapuna, Auckland. 1309

ZL1AYY Candy, F. A. (Mrs), 19a Claude Road, Manurewa, Auckland. 1702

ZL1AZ Brown, M. A., C.M.B. 103, Owthango, Taumarunui. 2656

ZL1AZA Robertson, K. F., Unit 90, Hibiscus Coast Retirement Village, Red Beach, Auckland. 1461

ZL1AZB Young, R. D., 7 Sturges Terrace, Te Kuiti. 2500

ZL1AZC Wilson, G. E., 10 Wech Drive, Warkworth. 1241

ZL1AZE Miller, B. D., 67 Hornsey Road, Melrose, Wellington. 6003

ZL1AZF Powell, W. L., 2/28 Coronation Road, Glenfield, Auckland. 1310

ZL1AZH Pabbruwe, H. I., 99 Bradbury Road, Howick, Auckland. 1705

ZL1AZI Hirst, J. R., 1a Northboro Road, Takapuna, Auckland. 1309

ZL1AZJ Sutherland, S. F., c/- P.O., Kaitiaki. 0500

ZL1AZL Eryenne, L. R., Boat Esme, c/- Post Office, Kerikeri. 0470

ZL1AZM Addison, R. R., 14 Clifton Road, Whakatane. 3080

ZL1AZP Brooke-Anderson, B. B., 2 Glenelg Road, Red Beach, Hibiscus Coast. 1461

ZL1AZR Rea, J. S. (Dr), 248 Kepa Road, Mission Bay, Auckland. 1005

ZL1AZS Christeson, E. L., 76 Highland Park Parade, Howick, Auckland. 1705

ZL1AZT Clare, I. K., c/- PDC, Te Puna, Tauranga. 3050

ZL1AZU Nelson, B. C., 59 Percy Street, Warkworth. 1241

ZL1AZV Millett, J. C. B., 24 Alexander Road, Algies Bay, Warkworth. 1241

ZL1AZW Lifting, A. M. (Mrs), Taylor Road, R.D. 3, Parauui, Kaitiaki. 0500

ZL1AZX Armstrong, J. B., R.D. 1, Tirohanga, Opotiki. 3092

ZL1AZY Green, R. G., 9 Bruce Avenue, Hamilton. 2001

ZL1AZZ Darrall, P. G., 11 Irene Crescent, Goodleigh, Hamilton. 2001

ZL1BA Witting, Erik, 17 Kohe Street, Whangarei. 0101

ZL1BAB Cooper, W. G., 7 Hartfield Rise, Papakura. 1703

ZL1BAC Hilliar, S. W., 10 Rewhiti Avenue, Takapuna, Auckland. 1309

ZL1BAD Knowles, R. E., Main Road, Onewhero, R.D. 2, Tuakau. 1892

ZL1BAF Trevena, A. R., 7 Lawrence Street, Tauranga. 3001

ZL1BAG McLennan, E. D., P.O. Box 443, Surfside, Waiheke Island. 1240

- ZL1BAI** Schollum, B. D., 3 Jellicoe Road, Whangaparapara, Great Barrier Island. 1240
- ZL1BAJ** Candy, B. R., 19a Claude Road, Manurewa, Auckland. 1702
- ZL1BAK** Burrage, D. H., 11 Bannister Place, Avondale, Auckland. 1007
- ZL1BAM** Milligan, J. W., 88 Tiramea Drive, Pakaranga, Auckland. 1706
- ZL1BAN** Hallett, R. C., 6a Dominion Street, Takapuna, Auckland. 1309
- ZL1BAO** Martin, H. R., 26 Dundee Place, Blockhouse Bay, Auckland. 1007
- ZL1BAP** Parr, J. B., 9 Willow Way, Pakuranga, Auckland. 1706
- ZL1BAQ** Heaven, K. J., 46 Workers Road, Wellsford. 1242
- ZL1BAR** Martensen, J. E., 34 Lawrence Street, Herne Bay, Auckland. 1002
- ZL1BAS** Morgan, O. J., 1 Waitete Road, Waihi. 3061
- ZL1BAT** Rodda, M. J., 20 Brentwood Avenue, Mt Eden, Auckland. 1003
- ZL1BAU** Bakulich, J. V. M., Mt Wesley Road, P.O. Box 18, Dargaville. 0300
- ZL1BAV** Vial, S. B., 57b Simon Ellice Drive, Glenfield, Auckland. 1310
- ZL1BAW** Coleman, R. E., 94 Darraghs Road, Tauranga. 3001
- ZL1BAX** Slaven, C. P., 19 Gilmore Street, Waihi. 3061
- ZL1BAY** Tarlton, B. M., 8 North Road, P.O. Box 81, Kaitiaki. 0500
- ZL1BB** Bunting, A. B., 3a Hillary Heights Avenue, Henderson, Auckland. 1008
- ZL1BBB** Scrivener, G. Y. (Mrs), 37 Woodside Road, Mt Eden, Auckland. 1003
- ZL1BBC** Cox, Brian, c/- Mrs S Benson, 33a Elliott Street, Howick, Auckland. 1705
- ZL1BBD** Sowerby, J., 23b Breckons Avenue, Newton, Hamilton. 2001
- ZL1BBE** Innes, R. J., 3 Roland Hill, Glen Eden, Auckland. 1007
- ZL1BBF** Lusk, R. I. B., 130 Scenic Drive, Titirangi, Auckland. 1007
- ZL1BBG** Dennis, D. M., c/- Happy Angler Store, Private Bag, Mourea, Rotorua. 3250
- ZL1BBH** Green, A. T., 98 Albert Street, Hamilton East. 2001
- ZL1BBJ** Ede, R. P. A., 136 Colville Road, Dargaville. 0300
- ZL1BBK** Allan, G. D., 44 Omaha Drive, R.D. 6, Warkworth. 1241
- ZL1BBM** Ashton, H. G., 238 Rangatira Road, Birkenhead, Auckland. 1310
- ZL1BBN** Parr, Win, P.O. Box 68, Te Awamutu. 2400
- ZL1BBP** Peace, K. I., Whangapoua Beach, R.D., Coromandel. 2851
- ZL1BBQ** Maxwell, S. G., 26 Tuhaere Street, Orakei, Auckland. 1005
- ZL1BBR** Chamberlin, P. C., P.O. Box 131, Clevedon. 1750
- ZL1BBS** Kilpatrick, G., 157a Long Drive, St Heliers, Auckland. 1005
- ZL1BBU** Medley, E. J., 10 Grosmont Terrace, Otumoetai, Tauranga. 3001
- ZL1BBW** Williams, K., Ody Road, Taurikura, R.D. 4, Whangarei. 0121
- ZL1BBZ** Holt, R., 10 Collingwood Road, Waiuku. 1852
- ZL1BC** Bomar, C. P., Briam Trail Farm, R.D. 2, Kaiwaka. 1240
- ZL1BCA** Batkin, B. W., Batkin Road, Hunua, R.D. 4, Papakura. 1730
- ZL1BCC** Crandall, S., Papatotara Coast Road, R.D. 1, Tuatapere. 9655
- ZL1BCD** Clarke, B. C., 14 Caspar Road, Papatoetoe, Auckland. 1701
- ZL1BCE** Eckett, J. A. B., 23 Pinedale Place, Henderson, Auckland. 1008
- ZL1BCH** Davis, Terry, 1/115 Great South Road, Manurewa, Auckland. 1702
- ZL1BCI** Sinclair, N. S., 29 Meadowland Street, Tauranga. 3001
- ZL1BCL** Lewis, V. A., 38b Burwood Road, Matamata. 2271
- ZL1BCN** Messent, A. J. (Mrs), Main Road, P.O. Box 23, Murupara. 3272
- ZL1BCO** Taupo Branch NZART (60), see Branch Directory
- ZL1BCR** Kozina, B., 5 Kahala Place, West Harbour, Auckland. 1250
- ZL1BCU** Boyd, B. F., 8 Wallis Street, Raglan. 2051
- ZL1BCV** White, J. W., 633b Kamo Road, Kamo, Whangarei. 0101
- ZL1BCW** Webber, H. C., 6 Brabant Street, Whakatane. 3080
- ZL1BCX** Fasher, N. C., 123 Peary Road, Mt Eden, Auckland. 1003
- ZL1BCY** McMillan, D. L., c/- Eventhorpe Private Hospital, 32 Fifth Street, Hamilton. 2001
- ZL1BCZ** Drummond, D. T., 5 Griffiths Place, Hamilton. 2001
- ZL1BD** Wilson, A., Waingaro Road, R.D. 1, Ngaruawahia. 2171
- ZL1BDA** Wright, C. C., 3 Livingstone Street, Milford, Auckland. 1309
- ZL1BDB** Trevena, M. R., 1 Talga Court, Conifer Grove, Takanini. 1702
- ZL1BDC** Brown, N. G., 8 Tui Grove, P.O. Box 136, Paihia. 0252
- ZL1BDD** Bowman, M. J., 8 Morice Place, Browns Bay, Auckland. 1310
- ZL1BDE** Visser, P., 4 Kauri Crescent, Matamata. 2271
- ZL1BDF** Petherick, G. R., 84 Aroha Avenue, Morningside, Auckland. 1003
- ZL1BDG** Mogford, F. L., 74 Buchanan Street, Opotiki. 3092
- ZL1BDH** Latham, G. W., 5a Halberg Crescent, Whakatane. 3080
- ZL1BDI** Draper, N., 61 Churchill Road, Murrays Bay, Auckland. 1310
- ZL1BDJ** Monk, Ena, 23 Matipo Avenue, Rotorua. 3201
- ZL1BDK** Phillips, K. A., 15 Shanley Crescent, Waiuku, Auckland. 1852
- ZL1BDM** Hansen, A. F., P.O. Box 809, Whangarei. 0115
- ZL1BDO** Mancer, E. S., 10 Delshaw Avenue, Stanmore Bay, Whangaparapara. 1463
- ZL1BDP** James, J. R., P.O. Box 471, Taupo. 2730
- ZL1BDQ** Wilkins, S. J., c/- Counter, NZ Post, Warkworth, Auckland. 1241
- ZL1BDT** Ngakuru, N. H., 31 Whihongi Street, Kaikohe. 0400
- ZL1BDU** Catton, R., 39 Andrew Road, Howick. 1705
- ZL1BDV** Schischka, G., 4 Gilliam Street, New Lynn, Auckland. 1007
- ZL1BDW** West, B. D., 67 Woodlands Road, Opotiki. 3092
- ZL1BDY** Seakins, J. M., 99 Exmouth Road, Northcote, Auckland. 1309
- ZL1BDZ** Hoban, Clarrie, 462 Kaitemako Road, R.D. 5, Welcome Bay, Tauranga. 3021
- ZL1BE** Collins, P., 395 East Coast Road, Mairangi Bay, Auckland. 1310
- ZL1BEB** Williams, P., Kaihere, R.D. 1, Ngatea. 2852
- ZL1BEG** McFarlane, G. M., 3 Tui Place, Tokoroa. 2392
- ZL1BEH** Linscott, D. A., 11 Puia Street, Taupo. 2730
- ZL1BEJ** McCabe, B. R., 130 Takahae Road, Titirangi, Auckland. 1007
- ZL1BEK** McTurk, P. T. R., 40 Silverton Road, Waihi. 3061
- ZL1BEL** Lees, B., c/- 111 Notley Street, Westmere, Auckland. 1002
- ZL1BEM** Lockwood, D. C., 7 Adams Street, Waihi. 3061
- ZL1BEN** Doggett, George, c/- 46 Glenvista Place, Glenfield, Auckland. 1310
- ZL1BEP** Sharpe, N. R., Inlet Road, Kerikeri. 0470
- ZL1BEQ** McGee, S. R., Lewis Road, Otakiri, R.D. 3, Whakatane. 3080
- ZL1BER** Wood, G. J., Athenree, R.D. 1, Katikati. 3063
- ZL1BES** Barnes, J. C., c/- 28 Blomfield Street, Rotorua. 3201
- ZL1BEU** Jamieson, L. I. D., 122 Ngunguru Road, R.D. 3, Whangarei. 0120
- ZL1BEV** Derecourt, M. J., 2 Stonehurst Avenue, Waiuku. 1852
- ZL1BEX** Wilson, A. L. G., 16 Rahiri Road, Mt Eden, Auckland. 1004
- ZL1BEY** Smart, J. B., 157 Rodney Street, Wellsford, North Auckland. 1242
- ZL1BEZ** Miller, P. G., 300 Evans Bay Parade, Hataitai, Wellington. 6003
- ZL1BF** Hall, R. J., 9 Lowtherhurst Road, Massey, Auckland. 1008
- ZL1BFA** Butcher, P. D., 27 Marsh Road, Ruakaka, Whangarei. 0253
- ZL1BFB** Walker, Ian, 51 Caronia Crescent, Mt Roskill, Auckland. 1004
- ZL1BFC** Hellyar, J. S., 52b Milford Road, Milford, Auckland. 1309
- ZL1BFD** Potts, G. C., 169 Alfriston Road, Manurewa. 1702
- ZL1BFE** Harland, J. C., 39 Papanui Street, Tokoroa. 2392
- ZL1BFF** McGrath, R., 8 Ander Place, Takapuna, Auckland. 1309
- ZL1BFH** Perkins, I. M., 74 Tawari Street, Matamata. 2271
- ZL1BFJ** Adams, L. B., 3 Sim Street, Matamata. 2271
- ZL1BFK** Frakes, M. C., 29 Riverside Drive, Waiuku. 1852
- ZL1BFM** Andrews, T. I., 427 Fraser Street, Tauranga. 3001
- ZL1BFN** Mathew, J. C. H., P.O. Box 234, Blenheim. 7315
- ZL1BFR** Beere, J. E. L., Main Road, R.D. 1, Howick. 1730
- ZL1BFS** Birt, K. D., 3 Cheeseman Place, Meadowbank, Auckland. 1005
- ZL1BFV** HucKin, G. S., P.O. Box 13, Waitakere, Auckland. 1250
- ZL1BFX** Broadley, C. L., 32 Waiotahi Creek Road, Thames. 2801
- ZL1BFY** Donaldson, D. L., 80 Woolfield Road, Papatoetoe. 1701
- ZL1BFZ** Robertson, D. J., 29c Youngs Road, Papakura. 1703
- ZL1BG** Grumwald, J. B., R.D. 3, Tokerau Beach, Kaitiaki. 0500
- ZL1BGA** Martin, G. K. (Mrs), 26 Dundee Place, Blockhouse Bay, Auckland. 1007
- ZL1BGB** Glover, D. R., 5 Wyman Place, Pakuranga. 1706
- ZL1BGC** Trigg, D. M. (Mrs), Peria, R.D. 2, Kaitiaki. 0500
- ZL1BGD** Marr, Lance, 22 Swan Crescent, Pakuranga, Auckland. 1706
- ZL1BGE** Whitwell, G. R., 3 Grace Street, Matata, P.O. Box 46, Matata. 3084
- ZL1BGH** George, L. H., 71 Steward Street, Opotiki. 3092
- ZL1BGI** McCarthy, A. C., 1b Burden Avenue, Wainuiomata. 6008
- ZL1BGJ** Morrison, C. W., Matua Lifecare, 124 Levers Road, Tauranga. 3001
- ZL1BGK** Gordon, K. G., 117 Cashmere Avenue, Khandallah, Wellington. 6004
- ZL1BGN** Rounthwaite, T., 18 Duncan Avenue, Henderson, Auckland. 1008
- ZL1BGQ** McChesney, G. R., 5/1 Oakland Avenue, Papatoetoe. 1701
- ZL1BGR** Maddern, D. E., 463 Turene Lane, Te Awamutu. 2400
- ZL1BGS** East, T. A., Rotongaro Road, R.D. 2, Huntly. 2191
- ZL1BGU** Felt, B., P.O. Box 39-173, Auckland West. 1730
- ZL1BGV** Roberts, M. J., 11 Grey Street, Hamilton. 2001
- ZL1BGW** Maude, R. de M., 68 Levers Road, Otumoetai, Tauranga. 3001
- ZL1BGZ** Forsyth, A. B., 90 Paraonui Road, Tokoroa. 2392
- ZL1BH** Creasy, S. C., Pamuzinda Lodge, 14 Taharepa Road, Taupo. 2730
- ZL1BHB** Riley, S. G., 18 Charles Road, Rotorua. 3201
- ZL1BHC** Walker, A. N., Crane Road, R.D. 1, Kamo. 0131
- ZL1BHD** Wright, S. W., 130 James Street, Whakatane. 3080
- ZL1BHE** Matthews, J. F., 26 Oceanview Road, Northcote, Auckland. 1309
- ZL1BHF** Sloan, W. J., 20 Acorn Street, Royal Oak, Auckland. 1003
- ZL1BHG** Robinson, I. A. S., 8 Bledisloe Court, Pukekohe. 1800

ZL1BHH

ZL1BHH Ferguson, M. E., 5b Terrace Avenue, Mt Maunganui. 3002
ZL1BHI Dingle, W. M., 363b Maungatapu Road, Tauranga. 3001
ZL1BHJ Dekker, J., 17 Velma Crescent, Hamilton. 2001
ZL1BHL Taylor, G. L., 19 Tetley Road, Waiheke. 1240
ZL1BHM Te Puke, C., P.O. Box 15-057, Dinsdale, Hamilton. 2030
ZL1BHN Oliver, K. W., 6/11 Woodhall Road, Epsom, Auckland. 1003
ZL1BHQ Powell, J. F., 47 Becroft Drive, Forrest Hill, Auckland. 1310
ZL1BHR Kovac, J. D., 25 Cromwell Street, Mt Eden, Auckland. 1003
ZL1BHS Deverell, H. C., 44 Mackersy Road, Whangarei. 0101
ZL1BHT Newcombe, B. R., 20b Fourth Avenue, Tauranga. 3001
ZL1BHU Watson, A. G., 204a Valley Road, Mt Maunganui. 3002
ZL1BHV Davis, W. H., 55 Phingua Street, Taupo. 2730
ZL1BHW Parkinson, M. A., 23c Eason Street, Rotorua. 3201
ZL1BHY Young, C. R., 1 Aoteoroa Terrace, Murrays Bay, Auckland. 1310

ZL1BI Freeman, Shirley, 236a Scenic Drive, Titirangi, Auckland. 1007

ZL1BIB Hookham, C. R., 2/1006 Beach Road, Torbay, Auckland. 1310

ZL1BIC Byrmand, J. L., 5 Te Anau Place, Tikipunga, Whangarei. 0101

ZL1BID Davis, E. T., 13 Dundee Place, Blockhouse Bay, Auckland. 1007

ZL1BIG Biggins, A. J., 16 Erin Street, Tikipunga, Whangarei. 0101
ZL1BII Shakes, L. C., c/- N Shakes, Awaiti Road, R.D. 3, Whakatane. 3080

ZL1BIJ Williams, L., 8 Anna Watson Road, Bucklands Beach. 1704

ZL1BIK McKechie, K. H., 13 Cron Avenue, Te Atatu South., P.O. Box 69-051, Glendene, Auckland. 1230

ZL1BIP Bingham, L. H., Walker Road East, P.O. Box 72, Katikati. 3063

ZL1BIQ Puffett, K. H., 51 McKean Avenue, Manurewa. 1702

ZL1BIS Westaway, K. F., P.O. Box 2239, Wellington. 6015

ZL1BIT Davy, N. C., Chatham Avenue, Albany, R.D. 3, Auckland. 1331

ZL1BIU Tan, Y. K. (Dr), 4 Wilmington Place, Forrest Hill, Auckland. 1310

ZL1BIV Garrett, J. W., 20 First View Avenue, Beachlands, Auckland. 1705

ZL1BIW Ward, L., 60 Ranfurly Street, Dargaville. 0300

ZL1BIX Soppet, D. A., 4a Ruarangi Road, Mt Albert, Auckland. 1003

ZL1BIZ Henry, Elva, 27 McRae Road, Mt Wellington, Auckland. 1006

ZL1BJA Hendriksen, R. H. E., R.D. 5, Wellsford. 1242

ZL1BJB Beale, D. J., P.O. Box 148, Drury, Auckland. 1750

ZL1BJC Orchard, Lin, P.O. Box 190, Whakatane. 3080

ZL1BJE Appleby, W. M., 8 Brightside Road, Whangaparaoa, Hibiscus Coast. 1463

ZL1BJF Henderson, A. R., 322 St Heliers Bay Road, St Heliers, Auckland. 1005

ZL1BJG Gray, M. F., 31 Karewa Parade, Papamoa. 3003

ZL1BJH Jehel, H. B., 8 Oregon Place, Papakura. 1703

ZL1BJI Goodsir, J. W., 24 Te Kapa Place, Snells Beach, Warkworth. 1240

ZL1BJJ Morris, T. J., 38 Stathmore Street, Matua, Tauranga. 3001

ZL1BJL Williams, C., Stokes Road, R.D. 2, Cambridge. 2351

ZL1BJM Cain, M. C., 20 Sayegh Street, St Heliers, Auckland. 1005

ZL1BJN Schief, W. K., 13 Roslyn Road, Mt Wellington, Auckland. 1006

ZL1BJO Wright, W. O., 12 Syme Crescent, Kawerau. 3083

ZL1BJP Parkinson, D. J., 36 Western Road, Otumoetai, Tauranga. 3001

ZL1BJQ Wardley, D. E., 45c Ambler Avenue, Glen Eden, Auckland. 1007

ZL1BJT Dougan, J. K., 35 Tunis Road, Panmure, Auckland. 1006

ZL1BJU Thompson, N. K., 11 Homestead Place, Glenview, Hamilton. 2001

ZL1BJV Turvey, W. W., 3/11 Faulkner Road, Northcote, Auckland. 1309

ZL1BJW Hallett, W. R., 17 Pauanui Pines, Kennedy Park Drive, Pauanui Beach. 2850

ZL1BJX Clark, L. D. G., 12 Richards Avenue, Papatoetoe. 1701

ZL1BJY Garratt, P. R., 294 Massey Road, Mangere East, Auckland. 1701

ZL1BJZ Farmer, J. B. S., 88 Ngapuhi Road, Remuera, Auckland. 1005

ZL1BK Long, R. J., 175 Green Lane Road, Greenlane, Auckland. 1005

ZL1BKA McIntosh, G. S., 4 Alexander Avenue, Maraetai, Auckland. 1705

ZL1BKB Williams, C., 13 Wren Street, Woodlands, Waikanae. 6454

ZL1BKC De Langen, H., 19 Bay View Road, Raglan. 2051

ZL1BKD Busch, Colin, P.O. Box 372, Warkworth. 1241

ZL1BKF Marshall, O. G., 16 Dunlop Drive, Pauanui Beach. 2850

ZL1BKG Wilson, T. H., 53 Tirimoana Road, Te Atatu, Auckland. 1008

ZL1BKH Hogg, E. R., 33 Simmons Crescent, Rotorua. 3201

ZL1BKI Salmond, A. R., 2/9 Tomintoul Place, Howick. 1705

ZL1BKJ Sandlant, P. W., 17 Mayfair Crescent, Mairangi Bay, Auckland. 1310

ZL1BKK Edwards, K., 49 Ocean Road, Surfdale, Waiheke Island. 1240

ZL1BKL Lister, Marion, 7 Sunnyview Avenue, Cockle Bay, Howick, Auckland. 1705

ZL1BKM Engel, F. W., P.O. Box 6528, Wellesley Street, Auckland. 1036

ZL1BKN Codlin, J. K., 8 Edgeware Road, West Harbour, Auckland. 1008

ZL1BKO Harris, J. B., Venden Lodge, 383 Cemetery Road, R.D. 9, Maunu, Whangarei. 0121

ZL1BKP Searle, K. A., 58 Gordon Street, Gisborne. 3801

ZL1BKQ Adams, C. W., 104b John Downs Drive, Browns Bay, Auckland. 1310

ZL1BKT Dowding, P., 175 Beach Street, Waikouaiti. 9063

ZL1BKU Davidson, B. J., 72 Monarch Avenue, Glenfield, Auckland. 1310

ZL1BKV Coombs, M. J., 13 Crispian Place, Weymouth, Auckland. 1702

ZL1BKX Rodgers, A. E., P.O. Box 19-006, Avondale, Auckland. 1230

ZL1BKY Rankin, A. N., 90 Hastings Road, Mairangi Bay, Auckland. 1310

ZL1BKZ Henry, R. I., 27 McRae Road, Mt Wellington, Auckland. 1006

ZL1BL Huntly Branch 17 Amateur Radio Club, see Branch Directory

ZL1BLB Churcher, B. R., 80 Hapburn Road, Glendene, Auckland. 1008

ZL1BLC Morris, T. N. J., 10 Sylvania Crescent, Lynfield, Auckland. 1004

ZL1BLD Ward, M. T., Okokako Road, R.D. 3, Kerikeri. 0470

ZL1BLF Poletti, M. J., 69 Willis Road, Papakura. 1703

ZL1BLG Borland, K., 2b Stella Drive, Kerikeri. 0470

ZL1BLI Ockleston, E. W., 25 Killarney Street, Takapuna, Auckland. 1309

ZL1BLK Elliott, K. L., 16/57 Richard Farrell Avenue, Remuera, Auckland. 1005

ZL1BLN Adnitt, E. (Mrs), 10 Laing Place, Otumoetai, Tauranga. 3001

ZL1BLN Newman, D. A., c/- M Tanton, 3 Glamis Avenue, Whangaparaoa. 1463

ZL1BLQ Salmons, R. J., 2 Townhead Crescent, Tauranga. 3001

ZL1BLR Fish, Len, 14 Willow Avenue, Hannah's Bay, Rotorua. 3201

ZL1BLS Smith, J. B., 13 Selwyn Avenue, Titirangi, Auckland. 1007

ZL1BLT Alderwick, Graham, 16 Foster Crescent, Belmont, Lower Hutt. 6009

ZL1BLU Anderson, P. A., 18 The Grove, Red Beach. 1461

ZL1BLV Howells, D., 267 Pohutukawa Avenue, Ohope, Whakatane. 3085

ZL1BLX Weston, G. A., 3/20 Rata Street, New Lynn, Waitakeri City. 1007

ZL1BLY Goodbrand, J. A., 4a Braintree Street, Kamo, Whangarei. 0101

ZL1BLZ Tunncliffe, G. W., 16 Wilding Avenue, Northcote, Auckland. 1309

ZL1BM Molloy, B. L., 460 Great South Road, Huntly. 2191

ZL1BMA Grey, G. R., 15 Tatyana Place, Royal Heights, Waitakere City. 1008

ZL1BMB Moroney, P. R., 12 Pallant Street, Manurewa. 1702

ZL1BMC Peters, D. E., 80 Pohutukawa Avenue, Ohope. 3085

ZL1BMD Shaw, R. K., 49 Sea Vista Drive, Pukerua Bay. 6450

ZL1BMF Musgrave, J. L., Wilks Road West, R.D. 2, Albany. 1331

ZL1BMG Stone, J., Thornton Road, R.D. 1, Cambridge. 2351

ZL1BMH Baker, R. F., 2/18 Tui Glen Road, Birkenhead, Auckland. 1310

ZL1BMJ Taylor, A. K., 65 Uxbridge Road, Howick. 1705

ZL1BMK Watt, R. G., 15 McKay Crescent, Dargaville. 0300

ZL1BMN Lethbridge, B. R., P.O. Box 418, Paihia, Bay of Islands. 0252

ZL1BMO Steele, Tom, 39a Thomson Street, Invercargill. 9501

ZL1BMP MacMillan, L. P. A., 4/15 Golden Crescent, Mission Bay, Auckland. 1005

ZL1BMQ Long, Alesha, 40 Morningside Road, Whangarei. 0101

ZL1BMS Simmonds, B. M., 363 Cobham Drive, Hamilton. 2001

ZL1BMT Haultain, A., 131 Riverside Drive, Whakatane. 3080

ZL1BMV Walker, V. L., 51 Kings Road, Paihia. 0252

ZL1BMW Lowry, M. R., Lowry Road, Bombay, Auckland. 1850

ZL1BMX Greenaway, W. P., 8 Stewart Place, Hamilton. 2001

ZL1BMY Clegg, R. J., 47 Churchill Road, Murrays Bay, Auckland. 1310

ZL1BMZ Padgett, A. B., 22 Finnerty Avenue, Howick, Auckland. 1705

ZL1BN Northern DX Association, c/- Murray Woodfield, ZL1CN, 72 Salamanca Road, Sunnynook, Auckland. 1310

ZL1BNA Marr, W. R. G., 27 Houhere Place, Tikipunga, Whangarei. 0101

ZL1BNB Newman, M. D., 30 Nikau Street, Wanganui. 5001

ZL1BNC Murray, L. G., 9 Maungawhare Place, Tauranga. 3001

ZL1BND Dowling, B. N., 47 Gray Avenue, Mangere East, Auckland. 1701

ZL1BNE Williamson, R., 21 Lyttelton Avenue, Forrest Hill, Auckland. 1310

ZL1BNF James, A. H., 8 Pyes Pa Road, R.D. 3, Tauranga. 3021

ZL1BNG Orton, N. J., 11 Glamis Avenue, Hamilton. 2001

ZL1BNH Murphy, P. M., 153 Oaklands Road, R.D. 1, Papakura. 1730

ZL1BNI Brant, P. A., 41 Regent Street, Papatoetoe. 1701

- ZL1BNJ** Pedersen, W. J., P.O. Box 404, Opotiki, 3092
ZL1BNK Painting, F. J., 26 Greenacres Drive, Kawakawa, 0291
ZL1BNL Schrickel, H. J. E., 8 McPherson Street, Remuera, Auckland, 1005
ZL1BNM Larcombe, D. C., 5 McMillan Place, Howick, Auckland, 1705
ZL1BNN Brill, A. J., 9 Marcel Place, Glenfield, Auckland, 1310
ZL1BNO Twinaime, M. H., 2/4 Burt Road, Mt Wellington, Auckland, 1006
ZL1BNP Were, B. J., 28 Lachlan Drive, Dinsdale, Hamilton, 2001
ZL1BNQ Gamble, Richard, 19a Chiania Place, Howick, 1705
ZL1BNU Mancor, P. J., 310 Hillsborough Road, Mt Roskill, Auckland, 1004
ZL1BNV Keatinge, R. N., 7/232 Mt Wellington Highway, Mt Wellington, Auckland, 1006
ZL1BNW Collin, J. V., 65 Paine Street, Judea, Tauranga, 3001
ZL1BNX Toft, T. B., 19b Ngapuhi Road, Remuera, Auckland, 1005
ZL1BNY Shakes, D. B., 12 Deuxberry Avenue, Northcote, Auckland, 1309
ZL1BNZ Clough, D. L. W., 5 Kelly Street, Rotorua, 3201
ZL1BOA Wigg, J. D., 42 Deep Creek Road, Torbay, Auckland, 1310
ZL1BOB Morgan, G. B., 34 Second Avenue, Whangarei, 0101
ZL1BOC Dennis, G. A., 91 Bridge Street, Opotiki, 3092
ZL1BOD Norrie, B. C., 102 Browns Bay Road, Browns Bay, Auckland, 1310
ZL1BOE Muir, C. B., 15 Tanglewood Place, Howick, Auckland, 1705
ZL1BOF Urquhart, G. A., 9 Four Trees, Howick, 1705
ZL1BOG Donnelly, D. R., 14 Seon Place, Birkenhead, Auckland, 1310
ZL1BOK Rowntree, R. J., 400 Hillsborough Road, Hillsborough, Auckland, 1004
ZL1BOM Glasgow, M. R., 124 Grange Road, Tauranga, 3001
ZL1BON Bonington, L. M., P.O. Box 75, Kaukapakapa, 1250
ZL1BOP Emery, N. F., 10 Charmaine Road, Torbay, Auckland, 1310
ZL1BOQ Duffy, D. B. H., P.O. Box 1034, Papakura, 1730
ZL1BOR McNamara, Lesley, 32 Galileo Street, P.O. Box 8, Ngaruawahia, 2171
ZL1BOS Williams, J. B., Kainui Road, R.D. 1, Taupiri, 2171
ZL1BOT Shuker, C. J., 22 Cook Drive, Whitianga, 2856
ZL1BOU Moroz, Z., 5 Kayle Glen, West Harbour, Auckland, 1008
ZL1BOW Fendley, G. L., 10 Vanda Place, Geerton, Tauranga, 3001
ZL1BOZ Williams, Gordon, North Road, R.D. 2, Papakura, 1730
ZL1BP Harris, W. F. H., 80 Roberts Road, Te Atatu South, Auckland, 1008
ZL1BPA Corin, T. G., 2 Innisfree Drive, Ellerslie, Auckland, 1005
ZL1BPB Smith, R. A., 37 Kensington Road, Waihi, 3061
ZL1BPC Martin, F. B., 223 Bellevue Road, Tauranga, 3001
ZL1BPD Cochran, C. D., 100 Manaia Road, Tokoroa, 2392
ZL1BPF Wilcox, H. J., 64 Taylor Road, Mangere Bridge, Manukau City, 1701
ZL1BPG Jones, N. E., 15 Braemar Road, Castor Bay, Auckland, 1309
ZL1BPH Fransham, G. E., 29 Tamaki Avenue, Otahuhu, Auckland, 1006
ZL1BPI Ronke, B. R., Weston Lea Drive, R.D. 2, Hamilton, 2021
ZL1BPJ Christensen, R. A., Cambridge Road, R.D. 4, Tauranga, 3021
ZL1BPK Junge, A. G., 128 Stanley Avenue, Te Aroha, 2971
ZL1BPL McKenzie, R. C., 24 Henderson Street, Whakatane, 3080
ZL1BPM Browne, Lorraine, 27 Vivian Drive, Omokoroa Beach, Tauranga, 3050
ZL1BPN Johnson, E. A., 11 Kowhai Park Road, Maunu, Whangarei, 0101
ZL1BPO Bach, E. A., 134 Methuen Road, Avondale, Auckland, 1007
ZL1BPP Wilkins, D. J. H., 12 Valdesse Rise, Browns Bay, Auckland, 1310
ZL1BPQ Nettleingham, F. J., Matahui Road, Katikati, 3063
ZL1BPU Greenman, M., 4 Kentucky Street, Ellerslie, Auckland, 1005
ZL1BPW Foreman, Q. S., 42 Seaview Road, Milford, Auckland, 1309
ZL1BPX Ansley, B. K., 3/21 Broadway, Picton, 7372
ZL1BQ Auckland VHF Group (Inc), see Branch Directory
ZL1BQA Doell, E. D., 11 Sandspit Road, Waiuku, 1852
ZL1BQC Woolf, P. H., 2 Bourbon Terrace, Karori, Wellington, 6005
ZL1BQD Runciman, R. J., 36 Cardiff Road, Pakuranga, Auckland, 1706
ZL1BQE Dix, K., 21 Adel Place, Weymouth, Auckland, 1702
ZL1BQF Ryan, L. J., 12 Twin Wharf Road, Herald Island, Auckland, 1250
ZL1BQH Lawson, T. A., 19 View Road, Glenfield, Auckland, 1310
ZL1BQI Milne, A. W., 56 Hamurana Road, Omokoroa Beach, Tauranga, 3050
ZL1BQJ Tetenburg, C. R., Ward Road, R.D. 2, Rotorua, 3221
ZL1BQK Shackleton, R. V., 8 Rongopai Place, Kaitiaki, 0500
ZL1BQL Robinson, L. K., Lot 4, 46 Pulham Road, Postal: P.O. Box 253, Warkworth, 1241
ZL1BQM Walker, B. F., 71 Pleasant Road, Titirangi, Auckland, 1007
ZL1BQO Hynds, A. G., P.O. Box 534, Tauranga, 3015
ZL1BQP Buckton, M. D., 84 John Gill Road, Howick, Auckland, 1705
ZL1BQT Le Varre-Waters, I. D., 127 Whitney Street, Blockhouse Bay, Auckland, 1007
ZL1BQW Armstrong, Christine, Mclvor Road, R.D. 4, Whakatane, 3080
ZL1BQX Clark, L. C., 36a Jubilee Crescent, Whakatane, 3080
ZL1BQY Clayton, C. J., 21 Hope Farm Road, Pakuranga, Auckland, 1706
ZL1BQZ Jarvis, S. A., 45 Olympic Drive, Whakatane, 3080
ZL1BR Reed, W. A., P.O. Box 441, Whangaparaoa, 1463
ZL1BRB Rompa, A. P. A., 22 Abbotleigh Avenue, Te Atatu, Auckland, 1008
ZL1BRC Ross, S. J., 5 Roxby Terrace, Glenowrie, Auckland, 1005
ZL1BRD Timms, D. E., Kendall Road, Kerikeri, 0470
ZL1BRE Kristensen, P., Keenan Road, R.D. 3, Tauranga, 3021
ZL1BRF Stormont, B. I., 101 Ascot Road, P.O. Box 43-024, Mangere, Auckland, 1730
ZL1BRG Macken, Shirley, P.O. Box 233, Whangaparaoa, 1463
ZL1BRI Crawford, W., 42 Forest Lake Road, Hamilton, 2001
ZL1BRJ Furness, J. B., 25 Arcadia Road, Epsom, Auckland, 1003
ZL1BRK Stewart, D. A., 10 Currell Way, Howick, 1705
ZL1BRL Cornwall, P. J., 10 Park Avenue, Northcote, Auckland, 1309
ZL1BRM McElwain, B. R., 2 Ruru Place, Omori, R.D. 1, Turangi, 2751
ZL1BRN Norgate, M. H., P.O. Box 774, Onerahi, Whangarei, 0115
ZL1BRO Brenner, B. N., 67 Norwood Road, Bayswater, P.O. Box 33-112, Takapuna, Auckland, 1332
ZL1BRP Price, P. G., 16 Ruahine Street, Tauranga, 3001
ZL1BRQ Macken, C. G. C., P.O. Box 233, Whangaparaoa, 1463
ZL1BRR Wallace, M. R., 37 Church Street, Onerahi, Whangarei, 0101
ZL1BRS Sutherland, S. D., 10 Lakeview Terrace, Huntly, 2191
ZL1BRU Gilbert, W. S., 25 Bay View Road, Raglan, 2051
ZL1BRV Gardiner, P. R., 3 Nyssa Place, Totara Heights, Manurewa, 1702
ZL1BRW Boghurst, A. D., 70 Ostend Road, Ostend, Waiheke Island, 1240
ZL1BRX Bain, Eileen, 58 George Crescent, Buckland, R.D. 2, Pukekohe, 1800
ZL1BRY Anderson, H. C., R.D. 5, Otorohanga, 2564
ZL1BRZ Hill, B., 104 Omaha Drive, R.D. 6, Omaha, Warkworth, 1241
ZL1BS Scott, D. T. S., 237 Metcalfe Road, Ranui, Auckland, 1008
ZL1BSA Rodgers, A. H., 22 Golders Place, Taupo, 2730
ZL1BSB Sutherland, Charlotte, Ruaroa Road, Post Office, Kaitiaki, 0500
ZL1BSC Pearce, S. W., 16 Donald Road, Kaitiaki, 0500
ZL1BSF Talsma, P., 22a MacDonald Road, Glenview, Hamilton, 2001
ZL1BSG Pearce, T. K. L., 23 Aurea Avenue, Pakuranga, Auckland, 1706
ZL1BSI Hetherington, J. K., 36 Norton Road, Cherrywood, Tauranga, 3001
ZL1BSJ Stewart, R. C., 11 Culver Terrace, Howick, Auckland, 1705
ZL1BSM Te Aroha and District R.C. Branch 77 NZART (Inc), see Branch Directory
ZL1BSN Wallingford, N., 55 Watling Street, Tauranga, 3001
ZL1BSS Hawker, A. R., 94 Harrington Road, Henderson, Auckland, 1008
ZL1BST Stirling, B. T., 157b Whitford Road, Howick, Auckland, 1705
ZL1BSU Coles, H. G., 2/11 Walter Street, Takapuna, Auckland, 1309
ZL1BSV Mace, R. J., 9 Grampian Street, Tokoroa, 2392
ZL1BSX Richmond, M. N., 46 Kings Road, Pahia, Bay of Islands, 0252
ZL1BSY Gerritsen, J., R.D., Okauia, Matamata, 2271
ZL1BTA Rodgers, Shirley, 19 Craddock Street, Avondale, Auckland, 1007
ZL1BTB Pinfold, M. A. (Dr), 28 McKenzie Road, Owata, Rotorua, 3201
ZL1BTC Churchhouse, M. J., 7 Drake Street, Howick, Auckland, 1705
ZL1BTD Smith, T. S., 122a Birkdale Road, Birkdale, Auckland, 1310
ZL1BTF Rogers, L. A., P.O. Box 79, Kaitiaki, 0500
ZL1BTG Tomlinson, G. H. J., c/- Ray Small Drive, Papakura, 1240
ZL1BTI Moroney, Ron, 495 Seaview Road, Onetangi, Waiheke Island, 1240
ZL1BTJ Blythen, L. E., P.O. Box 41, Matakana, 1240
ZL1BTK Parkinson, R. J., 70 Vandeleur Avenue, Birkdale, Auckland, 1310
ZL1BTL Rowe, N. G., 821 Clevedon-Kawakawa Bay Road, Clevedon, R.D. 5, Papakura, 1750
ZL1BTM Stratford, N. E., 4 Stratford Drive, Cable Bay, Northland, 0557
ZL1BTP Tubby, Laureen, 470 Beach Road, Papamoa, 3003
ZL1BTQ Allen, R., 77 Church Street, Opotiki, 3092
ZL1BTR Jeffares, R., P.O. Box 13-276, Onehunga, Auckland, 1132
ZL1BTU Orange, L. R., P.O. Box 40-262, Glenfield, Auckland, 1330
ZL1BTW Halliday, H., 20 Hillcrest Road, Orewa, Auckland, 1461
ZL1BTX van der Meulen, F. P., 20 Walter Street, Takapuna, Auckland, 1309
ZL1BTY Maindonald, D. C., 83 Grafton Road, Auckland, 1001
ZL1BTZ Dawe, L. J., 6 Linwood Avenue, Forrest Hill, Auckland, 1309
ZL1BU Frederick, G. I., 13b Tobin Place, Taupo, 2730
ZL1BUB Crymble, C. F., 19 Scotts Road, Manurewa, 1702

ZL1BUC

ZL1BUC Trigg, C. N., Peria, R.D. 2, Kaitaia. 0500
ZL1BUD Morris, G. A., Weston-Lea Drive, R.D. 2, Hamilton. 2021
ZL1BUE Dawson, J. W., P.O. Box 19-337, Central P.O., Hamilton. 2030
ZL1BUH Cox-Smith, G. W., 7 Vectis Road, Hamilton. 2001
ZL1BUJ Willis, R. P., P.O. Box 3102, Onerahi, Whangarei. 0132
ZL1BUJ Mackey, C. J., R.D. 1, Kamo, Whangarei. 0131
ZL1BUK Duske, J. S., 11 Pendene Place, Forrest Hill, Auckland. 1310
ZL1BUL Holmes, N. E., 3 Wainoni Avenue, Point Chevalier, Auckland. 1002
ZL1BUP Johnson, Fred, 49 Youngs Road, Papakura. 1703
ZL1BUQ Haigh, W. H., 12 Kauri Loop Road, Oratia, Auckland. 1007
ZL1BUR Linton, S. J., 190 Pokuru Factory Road, R.D. 5, Te Awamutu. 2400
ZL1BUS O'Brien, T. N., Wisemans Road, R.D., Waitoa. 2050
ZL1BUT Eggleton, P. W., P.O. Box 109, Russell. 0255
ZL1BUU Levin, P. C., Gower Road, R.D. 2, Taupiri. 2171
ZL1BUV Atchinson, Inez, SV6, Bethesda, Private Bag 76 900, Manukau. 1730
ZL1BUY Finn, W. J., McLeods Bay, R.D. 4, Whangarei. 0121
ZL1BUZ Pont, A., 23 Mount View Drive, Rotorua. 3201
ZL1BV Birch, R. W., Riverside Drive, P.O. Box 5092, Regent, Whangarei. 0130
ZL1BVA Cullen, J. K., 6 Icarus Place, Rotorua. 3201
ZL1BVB Yuen, S. T. (Mike), 7 Dallas Place, New Windsor Heights, Auckland. 1007
ZL1BVE Lelieveld, J. J., c/- 7 Lorraine Place, Glenview, Hamilton. 2001
ZL1BVF Keatinge, Loma, 8 Barnard Street, Matamata. 2271
ZL1BVG Reid, D., 13a Lancaster Road, Beachhaven, Auckland. 1310
ZL1BVH Bishop, R. B., 11 Whiteacres Drive, Pakuranga, Auckland. 1706
ZL1BVJ Jones, P., 41 Caronia Crescent, Mt Roskill, Auckland. 1004
ZL1BVK Learmond, A. H., 14 Takapu Street, Henderson, Auckland. 1008
ZL1BVM Sharman, R., P.O. Box 602, Thames. 2815
ZL1BVN van der Hulst, P. W., Matangi Road, R.D. 4, Hamilton. 2021
ZL1BVO Messenger, G. E., 104 Elizabeth Street, Taupo. 2730
ZL1BVP Chang, J. Y. S., 6 Esperance Road, Glendowie, Auckland. 1005
ZL1BVQ Edmonds, J. W., Ferry Road, R.D. 1, Paeroa. 2951
ZL1BVR Parkinson, W. H. J., 51 Jacaranda Avenue, Birkdale, Auckland. 1310
ZL1BVS Marquart, S. A. R., 29 Clyside Avenue, Bucklands Beach. 1704
ZL1BVT Slegh, J. P. (Miss), 2/69a Symonds Street, Royal Oak, Auckland. 1006
ZL1BVV Boylan, R. P., 1 Ceramco Place, Torbay, Auckland. 1310
ZL1BVW Souchokoff, A. A., 1/2 Dexter Avenue, Mt Eden, Auckland. 1003
ZL1BW Woltersdorf, W. G. B., 105 Freyberg Street, Otumoetai, Tauranga. 3001
ZL1BWB Humphrey, G. A., 7 Scott Street, Tauranga. 3001
ZL1BWC Comber, J. P., 21 Castor Place, Rotorua. 3201
ZL1BWD Dobbs, L., 2/31 Voltair Court, Howick, Auckland. 1705
ZL1BWE Henneveld, L. R., 21 Butler Place, Kamo, Whangarei. 0101
ZL1BWG Scahill, B. G., 55 Central Avenue, Papatoetoe, Auckland. 1701
ZL1BWH Sheldon, B. R., 16 Carter Street, Mt Maunganui. 3002
ZL1BWI Rose, A., 34 Lyndhurst Road, Te Atatu South, Auckland. 1008
ZL1BWK McConnochie, B. D., 8 Farmer Street, Te Aroha. 2971
ZL1BWM Traves, D. J., Beach Road, Ahipara. 0551
ZL1BWO Barnaby, N. S., 42 Mains Avenue, Whangarei. 0101
ZL1BWP Horn, B. R., 5 Monique Place, Hamilton. 2001
ZL1BWQ Le Cornu, Ethel, Kiwitahi, R.D. 1, Morrinsville. 2251
ZL1BWS Harris, J. M., 21 Tapper Crescent, Tipikunga, Whangarei. 0101
ZL1BWT MacLean, A., 4 Quibray Place, Howick. 1705
ZL1BWV Thompson, G. M., Pungaere Road, PDC, Waipapa. 0470
ZL1BWY Storey, G. K., 30 Beresford Street, Bayswater, Auckland. 1309
ZL1BWX Collins, S. J., 13 Paratai Crescent, Whangarei. 0101
ZL1BWZ Purser, W., P.O. Box 5677, Wellesley Street, Auckland. 1036
ZL1BX Smith, M. A., 32 Glenveagh Drive, Hillsborough, Auckland. 1004
ZL1BXA Buxton, H. C., 32 Castleton Street, Birkdale, Auckland. 1310
ZL1BXB Grut, M. A. (Mrs), 97 Tiri Road, Whangaparaoa. 1463
ZL1BXD Vencatathellum, V., 47 Ayton Drive, Glenfield, Auckland. 1310
ZL1BXE O'Neil, E., 12/198 Hurstmere Road, Takapuna, Auckland. 1309
ZL1BXF Young, B., 44 Tora Street, Torbay, Auckland. 1310
ZL1BXH Croucher, P. J., 739 Park Road, Te Awamutu. 2400
ZL1BXI Flower, C. B. G., 3/41 Rangitira Road, Birkdale, Auckland. 1310
ZL1BXJ Eman, J. J., 6 Shakespeare Road, Milford, Auckland. 1309
ZL1BXK Herold, N. G., Hales Road, R.D. 1, Waiuku. 1852

ZL1BXM Miers, E. R., R.D. 1, Dargaville. 0300
ZL1BXN Cullen, O. D., 62 Hurdall Street, Maungaturoto. 1240
ZL1BXO Grut, C. St. C., 97 Tiri Road, Whangaparaoa. 1463
ZL1BXP Walsh, Alison, Kerone, R.D. 1, Morrinsville. 2251
ZL1BXS Miller, P. G., Gilbert Mair Rise, R.D. 1, Russell. 0255
ZL1BXT James, C. H., 16 May Street, Hamilton. 2001
ZL1BXU Davis, L. H., 8 Muritai Street, Taupo. 2730
ZL1BXV Todd, A. J., 7/92 Princes Street, Otahuhu, Auckland. 1006
ZL1BXW Modderman, E. J., Bycroft Road, R.D. 2, Drury. 1750
ZL1BY Opotiki Amateur Radio Club NZART, see Branch Directory
ZL1BYA Martinson, L. R., 2/50 Howard Hunter Avenue, Saint Johns, Auckland. 1006
ZL1BYC Cornish, George, Ponga Road, R.D. 4, Papakura. 1730
ZL1BYD Emmett, G. J., 119 Udy's Road, Pakuranga, Auckland. 1706
ZL1BYE Thomas, R. S., 54 Lynmore Avenue, Rotorua. 3201
ZL1BYF Werder, K. J., Springdale, R.D., Waitoa. 2050
ZL1BYG Morey, E. J., 301 Fairview Road, Te Awamutu. 2400
ZL1BYH Farnborough, R., 164 Whatawhata Road, Hamilton. 2001
ZL1BYI Ramsay, I. S., 8 Locke Avenue, Hillsborough, Auckland. 1004
ZL1BYL Alloway, F. R., 311 Barrowclough Road, Whangamata. 3062
ZL1BYM Armstrong, P. G., 55b Pine Avenue, Hamilton. 2001
ZL1BYN Thompson, N. M., 75 Walworth Avenue, Pakuranga, Auckland. 1706
ZL1BYO Williamson, B. M., 158 Elizabeth Drive, Tokoroa. 2392
ZL1BYP Kennedy, A. G., 116 Wade River Road, Arkles Bay, Whangaparaoa. 1463
ZL1BYQ Ashmore, R. W., 47 Shelly Beach Road, Ostend, Waiheke Island. 1240
ZL1BYR Whyte, I. L. (Miss), (VK4BYR), 2/81 Chaucer Street, Moorooka, Brisbane, QLD 4103, Australia
ZL1BYS Harris, R. H., 15 Currell Way, Howick, Auckland. 1705
ZL1BYU McCra, R. W., 241 Northbridge, Akoranga Drive, Northcote, Auckland. 1309
ZL1BYV Greaves, I. G., 8 Bassett Place, Taradale, Napier. 4001
ZL1BYW Allan, W. W., Hairini, R.D. 5, Te Awamutu. 2400
ZL1BYX Cartwright, G. T., 6 Haycock Avenue, Mt Roskill, Auckland. 1004
ZL1BYZ Shaw, John, Private Bag, Paerata, Pukekohe. 1800
ZL1BZ Howitt, I. M., 15 Frederick Street, Otorohanga. 2564
ZL1BZA Barnett, Z., 152 Eden Avenue, Te Awamutu. 2400
ZL1BZB Cox, G. W., 141 Garnet Road, Westmere, Auckland. 1002
ZL1BZC Ash, D. E., 51 Foster Avenue, Huia, Auckland. 1250
ZL1BZD Bishop, N. L., 11 Whiteacres Drive, Pakuranga. 1706
ZL1BZE Cordes, R. K., 177 Rathgar Road, Henderson, Auckland. 1008
ZL1BZF Nesfield, J. C., 4/10 Akehurst Avenue, New Lynn, Auckland. 1007
ZL1BZI Newman, D. A., 112 The Avenue, Lynfield, Auckland. 1004
ZL1BZJ Lodge-Osborn, D., Turanga Road, R.D. 1, Henderson, Auckland. 1231
ZL1BZK Greenhill, D. R., 56 Oyster Drive, Cooks Beach, Whangarei. 2856
ZL1BZL Ellis, D. G. R., 30 Alamein Avenue, Onerahi, Whangarei. 0101
ZL1BZO Galland, J. M. (Mrs), C/- 109 Norwood Road, Bayswater, Auckland. 1309
ZL1BZS Chiswell, D. A., The Bullock Track, R.D. 3, Warkworth. 1241
ZL1BZT Cawte, P. L., 332 Upper Harbour Drive, Greenhithe, Auckland. 1450
ZL1BZU Lake, J. S., 17 Glynbrooke Street, Te Atatu South, Auckland. 1008
ZL1BZW Rodger, T. R. R., Waipapa Block Road, R.D. 6, Tauranga. 3021
ZL1BZX Hill, D. B., 25 Camellia Avenue, Ruakaka. 0253
ZL1BZZ Holmberg, R. E., R.D. 5, Tauranga. 3021
ZL1CA Trebes, C. E., 11 Lamont Street, Hamilton. 2001
ZL1CAA Harrison, E. C., 108 St. Patrick Row, Whangamata. 3062
ZL1CAC Whittaker, Joyce, 4 Oak Place, Whakatane. 3080
ZL1CAC Harsant, N. G., 105 Coronation Road, Hillcrest, Auckland. 1310
ZL1CAD Francis, S. D., P.O. Box 9313, Newmarket, Auckland. 1031
ZL1CAE Skevington, B. E., c/- P.O. Box 57, Horotiu. 2030
ZL1CAF Francis, M. E. (Mrs), P.O. Box 9313, Newmarket, Auckland. 1031
ZL1CAG Bott, B., H5/28 Mattland Street, Greerton, Tauranga. 3001
ZL1CAH Meyer, B. F. M., Barrett Road, R.D. 10, Hamilton. 2021
ZL1CAJ Coppell, G. G., 168 James Street, Whakatane. 3080
ZL1CAK Miller, R. N., 106 Chadwick Road, Greerton, Tauranga. 3001
ZL1CAN Fitzpatrick, J. D., Lake Rotoma, R.D. 4, Rotorua. 3221
ZL1CAM Longoran, O., 84 4th Avenue, Tauranga. 3001
ZL1CAP Jones, L. R., 49 Vale Road, St Heliers, Auckland. 1005
ZL1CAQ Gregory, J. H., 29 Ruawai Road, Mt Wellington, Auckland. 1006
ZL1CAR Keymer, R. C., 10 Barbary Avenue, Kelston, Auckland. 1007
ZL1CAS Gates, N. L., 542 Whangaparaoa Road, Whangaparaoa, Auckland. 1463
ZL1CAT Newland, P. J., P.O. Box 27-038, Mt Roskill, Auckland. 1030

ZL1DDL

- ZL1CAU** Earnshaw, M. B., P.O. Box 100-862, North Shore Mail Centre, Auckland. 1330
- ZL1CAV** Van Kuilenburg, Philippa, 45 Farrelly Avenue, Owairaka, Auckland. 1004
- ZL1CAW** Jones, A. R., 213 Whitney Street, Blockhouse Bay, Auckland. 1007
- ZL1CAX** Laird, A. G., East Coast Road, Mahia. 4192
- ZL1CAY** Liddle, B. D., 3 Hinemotu Avenue, Kawerau. 3083
- ZL1CAZ** Southwick, E. K., 40 Meadow Park Crescent, Tikipunga, Whangarei. 0101
- ZL1CB** Te Awamutu Amateur Radio Club Branch 40 NZART, see Branch Directory
- ZL1CBA** De Ridder, L. J. (Mrs), P.O. Box 246, Kerikeri. 0470
- ZL1CBB** Nortje, F. C., 308 Western Hills Drive, Whangarei. 0101
- ZL1CBD** Wilson, I. A., 28 Butler Road, Kerikeri. 0470
- ZL1CBE** Wright, W. A., Main North Road, R.D. 1, Awanui. 0552
- ZL1CBF** Bobb, D. G. L., 30 Reynard Terrace, Takanini, Auckland. 1702
- ZL1CBG** Bell, G. T., 48 Tapper Crescent, Tikipunga, Whangarei. 0101
- ZL1CBH** Blake, J. R., 12 Sutton Close, Puriri Park Road, Maunu, Whangarei. 0101
- ZL1CBI** Guilford, L. I., 2/35 Prospect Terrace, Milford, Auckland. 1309
- ZL1CBL** Dahl, N. L., Taratara Road, P.O. Box 36, Kaeo. 0471
- ZL1CBN** Tedbury, Ngaire, 216 Corks Road, Tikipunga, Whangarei. 0101
- ZL1CBO** Beard, D. M., P.O. Box 208, Awanui. 0552
- ZL1CBQ** Contesse, L. C., 240 Kiriapka Road, P.O. Box 7085, Tikipunga, Whangarei. 0133
- ZL1CBR** Jarman, J. D., P.O. Box 576, Franklin Road, Parua Bay, Whangarei. 0115
- ZL1CBS** Peterson, R. J., Mill Bay Motel, P.O. Box 282, Mangonui. 0557
- ZL1CBT** Beard, G. L., 11b Kohuhu Street, Kaitiaki. 0500
- ZL1CBX** Hayward, G. E., 1 Eves Court, Carrara 4211, Queensland, Australia
- ZL1CBZ** Pavitt, I. D., Cool Gardens, Boord Crescent, R.D. 1, Kumeu. 1250
- ZL1CC** Birt, D. J., 3 Cheeseman Place, Meadowbank, Auckland. 1005
- ZL1CCC** Devenish-Meares, M. H., 8 The Esplanade, Eastern Beach, Auckland. 1704
- ZL1CCD** Cumin, M. H., P.O. Box 429, Whangarei. 0115
- ZL1CCG** Neil, H. P., 14 Bruce Place, Papatoetoe. 1701
- ZL1CCI** Anderson, Jim, 46a Nen Street, Oamaru. 8901
- ZL1CCJ** Goodenough, A. R., 754 East Coast Road, Browns Bay, Auckland. 1310
- ZL1CCL** Amster, M. S., 23 Chamberlain Street, Feilding. 5600
- ZL1CCN** Pearce, P. B., 7 Marvon Downs Avenue, Pakuranga, Auckland. 1706
- ZL1CCO** Cogan, D. G., 50 Konini Road, One Tree Hill, Auckland. 1005
- ZL1CCP** Davis, T. A., 224 Kirkwood Street, Thames. 2801
- ZL1CCR** Brown, P. F., 143 Grampian Street, Tokoroa. 2392
- ZL1CCT** Raglan Amateur Radio Club, see Branch Directory
- ZL1CCU** Wanner, R. G., R.D. 2, Rukuhia Road, Ohaupo. 2452
- ZL1CCV** Purves, P. S., 63a Tuhikaramea Road, Hamilton. 2001
- ZL1CCY** Scutts, W. J., 509 Brown Street, Thames. 2801
- ZL1CD** Danaher, T. J., 2 Eastwood Rise, Browns Bay, Auckland. 1310
- ZL1CDE** Brickland, R. L., 52 Ascot Place, Te Awamutu. 2400
- ZL1CDF** Uren, P. E., 4 Frazer Street, Huntly. 2191
- ZL1CDH** Lindsey, A. R., 6 Walker Street, Waihi. 3061
- ZL1CDJ** Kitchen, D. H., Hart Road, R.D. 3, Hamilton. 2021
- ZL1CDM** Roberts, D. F., 2/162a King Street, Whakatane. 3080
- ZL1CDN** Burgess, B. W., P.O. Box 3007, Ohope. 3085
- ZL1CDP** Braid, J. B., 224 Faulkner Street, Tauranga. 3001
- ZL1CDQ** Powell, G. W., 394 Belk Road, R.D. 1, Tauranga. 3021
- ZL1CDT** Wilso, S. M. (Mrs), Parakao, PDC, Private Bag, Whangarei. 0120
- ZL1CDU** O'Loughlin, B. G., c/- 33 Oceanview Road, Waihi Beach. 3060
- ZL1CDV** Brabant, G. C., 83 Riverside Drive, Whakatane. 3080
- ZL1CDW** Keel, K. P., Stanley Road, R.D. 2, Opotiki. 3092
- ZL1CDX** Fielding, T., 26 Roosevelt Road, Western Heights, Rotorua. 3201
- ZL1CDY** Walker, R. G., P.O. Box 124, Kaitiaki. 0500
- ZL1CE** Wilson, G. R. S., 51 Clayburn Road, Glen Eden, Auckland. 1007
- ZL1CED** Lee, Julian, 54 Lagoon Drive, Panmure, Auckland. 1006
- ZL1CEG** Gates, A. (Mrs), 542 Whangaparaoa Road, Whangaparaoa. 1463
- ZL1CEH** McMaster, A. J., 19 Mons Avenue, Mt Roskill, Auckland. 1004
- ZL1CEI** Norman, C. R., 73 Norman Lesser Drive, St Johns Park, Auckland. 1005
- ZL1CEJ** Francis, W. D., P.O. Box 9313, Newmarket, Auckland. 1031
- ZL1CES** Hooker, C. R., 8 Walker Street, Waihi. 3061
- ZL1CF** Crooks, G. E., 13a John Street, Stanmore Bay, Whangaparaoa. 1463
- ZL1CGA** Kane, F. L. D., 8 Lancelot Road, Orewa, Auckland. 1461
- ZL1CHB** Smith, B. J., 19 Fieldstone Court, Howick, Auckland. 1705
- ZL1CHG** Boyd, H. A., 13a Long Street, Torbay, Auckland. 1310
- ZL1CHH** Russell, W. P., The Peninsular Club, 18/441 Whangaparaoa Road, Whangaparaoa. 1463
- ZL1CHM** Gillen, S. M., 20 Orton Street, Glenfield, Auckland. 1310
- ZL1CI** Meyer, T. R., 12 Honeysuckle Lane, Mairangi Bay, Auckland. 1310
- ZL1CIF** Landman, A., 12 Stuart Place, New Plymouth. 4601
- ZL1CJ** Smith, B. W., Kimihia Road, R.D. 1, Huntly. 2191
- ZL1CJH** Head, C. J., 57 Koha Road, Taupo. 2730
- ZL1CJM** McIsaac, C. J., 38 Carruth Road, Papatoetoe, Auckland. 1701
- ZL1CK** Martin, E. T., 109 Tony's Avenue, Totara, Thames. 2801
- ZL1CL** Leedom, C. A., 7 Crudge Street, Blockhouse Bay, Auckland. 1007
- ZL1CLG** Caldwell, J., 44 Uxbridge Road, Howick, Auckland. 1705
- ZL1CM** Prince, R. P., 19 Armstrong Road, Te Puna, R.D. 2, Tauranga. 3050
- ZL1CMA** Ellwood, R., 13 Cross Street, Regent, Whangarei. 0101
- ZL1CMD** Lowe, R. D., Te Uenga, R.D. 4, Hikurangi. 0251
- ZL1CMK** Morrison, C. M. K., 63a Church Street, Devonport, Auckland. 1309
- ZL1CMR** Rowlands, C. M., 6 Montague Place, Onerahi, Whangarei. 0101
- ZL1CN** Woodfield, M. K., 72 Salamanca Road, Sunnynook, Auckland. 1310
- ZL1CNJ** Jessup, G. R., 15 Modena Crescent, Glendowie, Auckland. 1005
- ZL1CO** Watson, A. D., 19 Tarapunga Place, Tokoroa. 2392
- ZL1COD** Shearer, J. M., 51 Kahurangi Drive, Taupo. 2730
- ZL1COR** Trenkner, T. L., 72 Lillis Lane, Coromandel. 2851
- ZL1CP** Clarke, R. W., Kaimaumau Road, R.D. 1, Awanui. 0552
- ZL1CPE** McTurk, A. G., Hamilton Road, R.D. 4, Thames. 3821
- ZL1CPL** Wiltshire, N. L., 42 Athenree Road, R.D. 1, Katikati. 3063
- ZL1CR** Ngakuru, R. A. (Mrs), P.O. Box 278, Kaikohe. 0400
- ZL1CS** Shaw, C. E., P.O. Box 2088, Whakatane. 3080
- ZL1CSC** Clayton, C. S., 6 Spinnaker Drive, Te Atatu Peninsula, Auckland. 1008
- ZL1CT** Snow, G. A., 51 Aeroview Drive, Beachhaven, Auckland. 1310
- ZL1CTI** Bowman, M. S., 10 Puriri Street, Takapuna, Auckland. 1309
- ZL1CU** Curtis, N. C., 9 Tarairi Road, Titirangi, Auckland. 1007
- ZL1CUC** Hobson, J., 20 Hobsonville Road, Massey, Auckland. 1008
- ZL1CUT** Alexander, C. J. (Dr), 49 Richard Farrell Avenue, Remuera, Auckland. 1005
- ZL1CV** Firman, R. J., 19 Tainui Street, Onerahi, Whangarei. 0101
- ZL1CVE** Clare, A. B., Goodall Road, Whakamarama, R.D. 6, Tauranga. 3021
- ZL1CVK** Wahrlich, Rowan, Whangamarino Road, R.D. 2, Te Kauwhata. 2152
- ZL1CW** Hargraves, J. E., 7 Ostend Road, Surfdale, Waiheke Island. 1240
- ZL1CWH** Stuart, D. T., 180a St Heliers Bay Road, St Heliers, Auckland. 1005
- ZL1CWN** Pope, B. A., 9 Harbour Lights Terrace, R.D. 2, Whitianga. 2856
- ZL1CX** Morgan, B. K., 14 Great South Road, Manurewa, Auckland. 1702
- ZL1CY** Webster, D. M., 46 Speight Road, Kohimarama, Auckland. 1005
- ZL1CYX** Edwards, W. H., 18 Shoebridge Crescent, Ngunguru. 0250
- ZL1CZ** Duxbury, T. A., 3/57 Marga Avenue, New Lynn, Auckland. 1007
- ZL1DA** Wilde, C. J., 8 Newburn Road, Browns Bay, Auckland. 1310
- ZL1DAA** Beaumont, G. S., 6 Keyte Street, Whangarei. 0101
- ZL1DAB** Williams, G. H., Taihoa Road, R.D. 4, Whangarei. 0121
- ZL1DAC** Moates, C. M. G., S.H. Maungatapere, P.O. Box 102, Maungatapere. 0250
- ZL1DAD** Swift, G. N., 25 Camellia Avenue, Ruakaka. 0253
- ZL1DAJ** Cottle, J. N. (Mrs), Rainbow Falls Road, R.D. 2, Kerikeri. 0470
- ZL1DAQ** Bradfield, D. S., 24 Selwyn Street, Blenheim. 7301
- ZL1DAS** Werlberger, B., Miranda Road, R.D. 1, Pokeno. 1872
- ZL1DAV** Reid, Dave, 47 Barrack Road, Mt Wellington, Auckland, P.O. Box 14-052, Panmure. 1134
- ZL1DAW** Wakefield, I. C., 11 Tunui Place, Whakatane. 3080
- ZL1DAX** Thomson, J., 4 Cherry Road, Howick, Auckland. 1705
- ZL1DAY** Tutauha, W. D., 48 Milne Street, Hunterville. 5455
- ZL1DB** Dugmore, K. F., 3 McBeth Drive, Te Puke. 3071
- ZL1DBC** McKenzie, Thelma, 24 Henderson Street, Whakatane. 3080
- ZL1DBE** Whittaker, V. W., 17 Princess Road, Tauranga. 3001
- ZL1DBG** Allan, R. W., c/- W. W. Allan, R.D. 5, Te Awamutu. 2400
- ZL1DBI** Sheldon, Raewyn, 16 Carter Street, Mt Maunganui. 3002
- ZL1DBK** Wighton, A. K., Ainsworth Road, R.D. 6, Tauranga. 3021
- ZL1DBL** Raiston, W. B., 168 Cambridge Road, Tauranga. 3001
- ZL1DC** Rietz, B. A., 2b Stella Drive, Kerikeri. 0470
- ZL1DD** Foster, Bert, Seaside Sanctuary Rest Home, P.O. Box 429, Surfdale. 1240
- ZL1DDL** Guenther, U., 27 Temple Street, Meadowbank, Auckland. 1005

ZL1DE

ZL1DE Adsheed, G. O., 35 Trevola Street, Avondale, Auckland. 1007

ZL1DEF Hallmond, W. H., 24 Charlotte Street, Dargaville. 0300

ZL1DES Kelly, A. W. D., 35 Church Street, Onerahi, Whangarei. 0101

ZL1DF Thames Radio Club Branch 41 NZART (Inc), see Branch Directory

ZL1DG Marsh, B. G., 49 Trammere Road, Hamilton. 2001

ZL1DH Edwards, J. R., 236 Vipond Road, Whangaparaoa, Auckland. 1463

ZL1DI Logan, J. D., 17 Quona Avenue, Hillsborough, Auckland. 1004

ZL1DIY Eckhoff, C., Post Office, Opua, Bay of Islands. 0290

ZL1DJ Hopkins, B. N., 133 Kitchener Road, Waiuku. 1852

ZL1DK Glucina, G., 31 Chelverton Terrace, Red Beach, Orewa. 1461

ZL1DKM Macartney, D., 5 Anderson Street, Putaruru. 2371

ZL1DL Birt, E., 41 Holland Road, Northcote, Auckland. 1309

ZL1DLE Portman, E. F., 6 New Brighton Road, Otahuhu, Auckland. 1006

ZL1DM Grayson, Rob, 25 Rembrandt Place, Papakura. 1703

ZL1DN Wishnowsky, R. E., 22 Okahu Road, Kaitia. 0500

ZL1DO Jakeman, Noel, 24 High Street, Whangarei. 0101

ZL1DOD Davidson, D., 10 Hartwell Place, Tauranga. 3001

ZL1DOH Doherty, S., 4 Springside Place, New Lynn, Auckland. 1007

ZL1DON Heta, D., 2 Mayfair Place, Henderson, Auckland. 1008

ZL1DP Patchett, P. B., 76 Grange Road, Mt Eden, Auckland. 1003

ZL1DQ Menendez, R. R., P.O. Box 99-300, Newmarket, Auckland. 1031

ZL1DR Brooker, A. D., 35 Wordsworth Street, Leamington, Cambridge. 2350

ZL1DS Colquhoun, P. R., "Ulu" Estate, Far North Road, R.D. 4, Pukenui, Kaitia. 0500

ZL1DSP Pickles, D. S., 207 Clevedon-Takanini Road, Ardmore, Postal: P.O. Box 58-477, Greenmount, Auckland. 1730

ZL1DT Rowe, E. G., 2/24 Cromdale Avenue, Howick. 1705

ZL1DU Thomas, A. E., 23 Amethyst Place, Chartwell, Hamilton. 2001

ZL1DUG Ramanui, D. T., 69 Hinemoa Street, Whakatane. 3080

ZL1DV Veale, R. S. (Mrs), 31 Rangitoto Avenue, Remuera, Auckland. 1005

ZL1DVB Van Beek, D. M., 16 High Street, Tirau. 2372

ZL1DW Walpole, D. B., Cordlyne Road, Port Waikato, R.D. 5, Taukau. 1892

ZL1DX Melville, R. A., 21a Blockhouse Bay Road, Avondale, Auckland. 1007

ZL1DY Skinner, D. E., 1 Grove Road, Devonport, Auckland. 1309

ZL1DYC Heyer, H. L., Brewster Road, R.D. 1, Taukau. 1892

ZL1DZ Heincen, M. J., 22 Durness Place, Orewa, Auckland. 1461

ZL1FA Greenaway, A. W., 92 Lynbrooke Avenue, Blockhouse Bay, Auckland. 1007

ZL1FB Bell, J. F. G., 34 Layton Road, Whangaparaoa. 1463

ZL1FBI Edwards, P. F., P.O. Box 36, Opotiki. 3092

ZL1FC Brott, R. O., Church Road, R.D. 2, Kaitia. 0500

ZL1FD Armstrong, D. K., Kaituna Road, R.D. 9, Te Puke. 3071

ZL1FE Wilson, R. J., 25 May Street, Hillcrest, Hamilton. 2001

ZL1FF Gifford, A. B., 566/1 Teasdale Street, Te Awamutu. 2400

ZL1FG Booth, B. W. G., 13 Bahari Drive, Ranui, Auckland. 1008

ZL1FH Barkman, D. B., 903/45 Stanley Point Road, Devonport, Auckland. 1309

ZL1FI Power, W. T., 100 Randof Street, Rotorua. 3201

ZL1FIT Fitzgerald, P. J., 33 Bosson Road, Te Aroha. 2971

ZL1FJ Lynch, R. N., 4140 Great North Road, Glendene, Auckland. 1008

ZL1FK Challinor, M. J., 31 Barrons Drive, Green Bay, Auckland. 1007

ZL1FL Waterhouse, D. C., 854 No 1 Road, R.D. 2, Te Puke. 3071

ZL1FM Robertson, J. S., 29 Cyclarama Crescent, Massey, Auckland. 1008

ZL1FMA May, F. R., 4/8 Elizabeth Street, Rotorua. 3201

ZL1FN Keesing, S., 68 Swann Beach Road, Whangaparaoa, Auckland. 1463

ZL1FND Far North Districts Amateur Radio Club, see Branch Directory

ZL1FON Nobbs, N. A., 85a King Edward Avenue, Bayswater, Auckland. 1309

ZL1FOX Sinclair, S. C., P.O. Box 789, Queenstown. 9197

ZL1FP Anchor, G. S., 46a May Street, Mt Maunganui. 3002

ZL1FR Wood, R. S., 5 Taktimu Street, Orakei, Auckland. 1005

ZL1FS Miller, S. P., 47 Monarch Avenue, Hillcrest, Auckland. 1310

ZL1FSS Whenuapai 5 Signal Squadron RNZAF Base, Private Bag, Whenuapai. 1250

ZL1FT Emerson, W. R., Omamari Beach Road, R.D. 3, Dargaville. 0300

ZL1FTL Lewis, F. T., 222 Glamorgan Drive, Torbay, Auckland. 1310

ZL1FU Hibiscus Coast Amateur Radio Club (Inc), see Branch Directory

ZL1FV Runciman, G. J. (Mrs), 36 Cardiff Road, Pakuranga, Auckland. 1706

ZL1FW Rowe, Maxine, P.O. Box 4013, Mt Maunganui. 3030

ZL1FX Hyde, K. G., 126b Te Atatu Road, Te Atatu South, Auckland. 1008

ZL1FY Armstrong, G. W., Melvor Road, R.D. 4, Whakatane. 3080

ZL1FZ Coates, K. J., 2 Bardia Street, Takapuna, Auckland. 1309

ZL1GA Hoy, M. H., 36 Sierra Street, Glendowie, Auckland. 1005

ZL1GB Powell, D. B., Unit 6 - 44 Pilkington Road, Panmure, Auckland. 1006

ZL1GBJ Jacobi, B. R., 8 Benella Street, Tokoroa. 2392

ZL1GC Craig, G. H., 12 Exploration Way, Whitby, Wellington. 6006

ZL1GD Barea, H., 14 Burn Street, Levin. 5500

ZL1GDH Henley, G. D., 4 Carson Street, Tokoroa. 2392

ZL1GE Manning, E., Lake Ngatu, R.D. 1, Awanui. 0552

ZL1GF Fish, J. F., 14 Howard Road, Northcote, Auckland. 1309

ZL1GFB Franklin-Browne, Glendin, 26 Motutaike Street, Taupo. 2730

ZL1GG Cooper, G. V. (Ms), P.O. Box 330, Mangonui. 0557

ZL1GH Hart, G., 89 Aeroview Drive, Beachhaven, Auckland. 1310

ZL1GI Brumby, C. J., 5 Matuhi Rise, Henderson, Auckland. 1008

ZL1GJ Dobbins, S. J., 56 Pohutukawa Drive, Pukete, Hamilton. 2001

ZL1GK Boyle, J. O., 3 Camelia Grove, Parklands, Waikanae. 6454

ZL1GL Kelly, T. D., 35 Rawhitiroa Road, Kohimarama, Auckland. 1005

ZL1GLC Great Lakes Community Centre, c/- G.E. Messenger, 104 Elizabeth Street, Taupo. 2730

ZL1GLM McCutcheon, G. L., 120 Kervil Avenue, Te Atatu North, Auckland. 1008

ZL1GLO Duxfield, I. H. (Mrs), 12 Admiral Crescent, Hamilton. 2001

ZL1GML Campin, J. W., 33 Taupiko Bay, Green Bay, Auckland. 1007

ZL1GN Beckham, D. S. R., 27 Fifth Avenue, Mt Albert, Auckland. 1003

ZL1GO Bilich, W. B., 91b Awara Road, Sunnyvale, Henderson, Auckland. 1008

ZL1GP Henderson, R. J., 87 Grange Road, Mt Eden, Auckland. 1003

ZL1GPS Shaw, P. J., 49 Mount View Road, Melville, Hamilton. 2001

ZL1GQ Coates, W. W., 25 Tamihana Street, Matamata. 2271

ZL1GR Goodwin, L., 43 Taupo Road, Taumarunui. 2600

ZL1GRF Faulkner, G. R., 59 6th Avenue, Tauranga. 3001

ZL1GS Webb, J. L., 1 Willow Place, Whangarei. 0101

ZL1GSG Storz, G., P.O. Box 109-700, North Shore Mail Service Centre, Auckland. 1330

ZL1GSN Nisbet, G. S., 18 Hillcrest Road, Kaikohe. 0400

ZL1GT Hooker, B. N. N., 9 Amorino Drive, Hibiscus Coast, Orewa. 1461

ZL1GTB Beagley, G. T., 4a Barraud Place, Rotorua. 3201

ZL1GU Rolfe, E. M., 9 Tait Street, Kamo, Whangarei. 0101

ZL1GW Ross, P. R., 57 May Street, Hillcrest, Hamilton. 2001

ZL1GWN McCulloch, K. D., c/- Tasman Forestry, Private Bag 3031, Rotorua. 3220

ZL1GX Hannaford, J. W., 3 Okoka Road, Rocky Bay, Waiheke Island. 1240

ZL1GYM Muzyka, G. Y., 33 Vermont Street, Ponsonby, Auckland. 1002

ZL1GZ Graham, E. W., 18 Seaway Terrace, Tauranga. 3001

ZL1HA Thompson, R. J., 64 Eban Avenue, Northcote, P.O. Box 33-442, Takapuna, Auckland. 1332

ZL1HAM Hoete, N. C., P.O. Box 213, Kawerau. 3083

ZL1HAU Hau, A. T., 10 Robbin Hood Place, Onerahi, Whangarei. 0101

ZL1HB Homer, H. L., 1/5 Weli Road, Orewa, Auckland. 1461

ZL1HC Schoeman, S. J. O. (Dr), P.O. Box 195, Stratford. 4700

ZL1HD Dahl, K. (Ms), Taratara Road, P.O. Box 36, Kaeo. 0471

ZL1HE Lord, I. K., 41a Peninsula Club, 441 Whangaparaoa Road, Whangaparaoa. 1463

ZL1HF Harrison, N. D., 42b Taikata Road, Te Atatu North, Auckland. 1008

ZL1HG Grewal, H. (Mrs), 39a La Rosa Street, Green Bay, Auckland. 1007

ZL1HH Cottle, D. J., Rainbow Falls Road, R.D. 2, Kerikeri. 0470

ZL1HI Willis, M. W., Harpoon Hill, R.D. 1, Claris, Great Barrier Island. 1240

ZL1HIT Rentoul, B. J., R.D. 1, Church Road, Kamo, Whangarei. 0131

ZL1HJ Gannon, M., 9 Liverpool Street, Te Kuiti. 2500

ZL1HK South Auckland Repeater Group, (in association with Suburban Amateur Radio Club (Inc.)), c/- Sec. A.V. Walker ZL1TRH, 51 Caronia Crescent, Lynfield, Auckland. 1004

ZL1HL Carrel, J. L., 167 St Andrews Road, Epsom, Auckland. 1003

ZL1HM Harvey, S. A., P.O. Box 2002, Rotorua. 3215

ZL1HN MacLaurin, P., 44 Taupo View Road, Taupo. 2730

ZL1HO Sando, B. C., 1 Rahopara Street, Castor Bay, Auckland. 1309

ZL1HP Hamblin, D. H., 11 Shelley Street, Leamington, Cambridge. 2350

ZL1HQ Clarke, B. T., Private Bag 92-056, Great Barrier Island, Auckland. 1240

ZL1HR Coles, J. P., 42 Hartford Avenue, Papamoa. 3003

ZL1HS Carter, Carol, 34 Higgs Road, Mapua, Nelson. 7155

ZL1HT Hardie, B. G. S., c/- Mrs C Paton, 1k R.D., Oamaru. 8921

ZL1HV Godfrey, A. G., 882 East Coast Road, Browns Bay, Auckland. 1310

- ZL1HW** Dickinson, R., 135 Greenhithe Road, Greenhithe, Auckland. 1450
- ZL1HX** Rutherford, N. J., 32 Kirrie Avenue, Te Atatu South, Auckland. 1008
- ZL1HZ** Curtis, C. E., 5 Argyle Road, Browns Bay, Auckland. 1310
- ZL1IA** Pivac, I. G., 4271 Great North Road, Henderson, Auckland. 1008
- ZL1IAN** Simpson, Ian, 65 Hilton Road, Rotorua. 3201
- ZL1IAS** Smiley, R. E., Pakiri Block Road, Tomorata, R.D. 4, Wellsford. 1242
- ZL1IB** Te Puke Branch NZART, see Branch Directory
- ZL1IC** Holdsworth, R., Sexton Road, R.D. 1, Hamilton. 2021
- ZL1ICE** Taia, P. M., 23 Kauri Crescent, Waikeria. 2456
- ZL1ID** Graham, N. L., 75 Campbell Road, Mount Maunganui. 3002
- ZL1IE** Skinner, G., 15 Hepper Street, New Lynn, Auckland. 1007
- ZL1IG** Monks, J., 2/9 Abelia Place, Papatoetoe, Auckland. 1701
- ZL1IH** Intermann, R. H. D., 22 Hikutaia Road, Opotiki. 3092
- ZL1II** Green, G. P. C., 248a Otupua Road, Timaru. 8601
- ZL1IK** Kelly, I. R. M., 52 Oceanview Road, Northcote, Auckland. 1309
- ZL1IM** Carter, E. W. A., 3 Haines Terrace, Te Kuiti. 2500
- ZL1IMP** Pratt, I. M., 25 Smith Street, Raglan. 2051
- ZL1IN** Pearce, R. M., 125 New Windsor Road, Avondale, Auckland. 1007
- ZL1IO** McNamara, T. A., 32 Galileo Street, P.O. Box 8, Ngaruawahia. 2171
- ZL1IP** Wiggins, F. V., 75 Te Hono Street, Tauranga. 3001
- ZL1IQ** Joseph, D. P., 51 The Drive, Epsom, Auckland. 1003
- ZL1IR** Douglas, L. M., 17 Fifth Avenue, Hamilton. 2001
- ZL1IS** Waikato VHF Group, see Branch Directory
- ZL1IT** Hayman, G. L., 2/53 Hattaway Avenue, Bucklands Beach, Auckland. 1704
- ZL1IU** Wallace, N. L., Signals Road, Okaihau, Northland, P.O. Box 143, Kaikohe. 0400
- ZL1IV** Irving, G. W., 50 Glass Road, Mt Roskill, Auckland. 1004
- ZL1IW** Watson, I. B., Kohinui Road, R.D. 1, Parua Bay. 0250
- ZL1IX** Taylor, W. R., 65a Butterworth Drive, Glendene, Auckland. 1008
- ZL1IY** Cleland, D. E., 52 Alfred Street, Fairfield, Hamilton. 2001
- ZL1IZ** Watomo Branch 55 NZART (Inc), see Branch Directory
- ZL1JA** Berends, J. M., 66a Bradbury Road, Howick, Auckland. 1705
- ZL1JAD** Daley, J. A., 3 Yacht Place, Bucklands Beach, Auckland. 1704
- ZL1JAM** Homi Girl Guides Association, 59 Ferguson Street, Manurewa, Auckland. 1702
- ZL1JAW** West, J. A., 4 Cradock Street, Avondale, Auckland. 1007
- ZL1JB** Nalder, C. H., 291 Busby Road, R.D. 1, Katikati. 3063
- ZL1JBM** Mulholland, James, Aid for the Blind, 10 Cameron Street, Fairfield, Brisbane, Queensland 4101, Australia
- ZL1JC** Granger, P. L., 7 Trent Street, Avondale, Auckland. 1007
- ZL1JCB** Slagter, J., P.O. Box 357, Whangarei. 0115
- ZL1JDA** Dunn, J. R., 264 Glenvar Road, Torbay, Auckland. 1310
- ZL1JDL** Hildreth, J. D. (Mrs), P.O. Box 292, Kumeu, Auckland. 1250
- ZL1JE** Blomfield, R. J., 5 Kent Street, Te Kuiti. 2500
- ZL1JF** Finlay, P. T., 62 Woodside Road, Henderson, Auckland. 1008
- ZL1JFJ** Johnson, J. F., 20 Golf View Road, Kerikeri. 0470
- ZL1JG** Dent, R. E., 22 Kelywn Road, Kelston, Auckland. 1007
- ZL1JH** Hodson, L., 71 Riverside Road, Orewa, Auckland. 1461
- ZL1JJ** Jackson, D., 67 Awaroa Road, Sunnyvale, Auckland. 1008
- ZL1JK** Freeman, J. C., 4 Jenanne Place, Glenfield, Auckland. 1310
- ZL1JKB** Bell, J. K., 28 Seymour Avenue, Papatoetoe. 1701
- ZL1JKO** Smith, J. W., F1/16a Whiteley Street, New Plymouth. 4601
- ZL1JL** Llewellyn, J. A., West Coast Road, Te Kopuru, R.D. 1, Dargaville. 0356
- ZL1JM** McIntyre, J., 10 Banksia Dell, Mt Maunganui. 3002
- ZL1JN** Turner, A., 140 Union Street, Howick. 1705
- ZL1JO** Walker, N. A., 14 Mawney Road, Henderson, Auckland. 1008
- ZL1JOE** Tilley, K. J., R.D. 2, Opotiki. 3092
- ZL1JP** Buckton, J. V., 14 Cackle Bay Road, Howick, Auckland. 1705
- ZL1JQ** Schofield, J. R., P.O. Box 4165, Hamilton East. 2032
- ZL1JR** Jones, J. W., 2/18 Meadowland Drive, Howick. 1705
- ZL1JRJ** Jones, J. R., 12 Buchanan Street, P.O. Box 181, Opotiki. 3092
- ZL1JS** Baker, M. R., Attwood Road, Tamaterau, R.D. 4, Whangarei. 0121
- ZL1JSS** Smyth, J., Rotongaro Road, R.D. 2, Huntly. 2191
- ZL1JT** Turnwald, J. B., 29 Cliffview Drive, Green Bay, Auckland. 1007
- ZL1JU** Teviotdale, B. M., P.O. Box 7051, Rotorua. 3230
- ZL1JW** Paltridge, J. S., 3 Tutere Road, Papatoetoe. 1701
- ZL1JX** Price, F., 2 Pine Road, Orewa, Auckland. 1461
- ZL1JY** Field, A. N., 6 Vine Avenue, Maungatapu, Tauranga. 3001
- ZL1JZ** Davison, P. W., P.O. Box 16, Waikino. 3060
- ZL1KA** Addis, B. G., Clark Road, Karaka, R.D. 1, Papakura. 1750
- ZL1KB** Brown, R. L., Kemp Road, P.O. Box 168, Kerikeri. 0470
- ZL1KC** Page, A., 6 Matai Place, Otaki. 6471
- ZL1KD** Fairweather, A. W., 69 Burwood Road, Matamata. 2271
- ZL1KEL** Brooking, K. J., 2 Leslie Street, Taupo. 2730
- ZL1KEV** Dove, K. N., c/- 112b Amanda Avenue, Hamilton. 2001
- ZL1KF** Cole, L. J., c/- PDC, Pirongia. 2450
- ZL1KG** Ramsay, R. J., 1/72 Cairnfield Road, Whangarei. 0101
- ZL1KH** Turton, J. W., 46a Onehunga Mall, Onehunga, Auckland. 1006
- ZL1KI** Horwood, E. W., 233 King Street, Whakatane. 3080
- ZL1KIV** Kivell, G. J. (Dr), P.O. Box 167, Huntly. 2191
- ZL1KJ** Cole, Gary J., 7 Vincero Place, Green Bay, Auckland. 1007
- ZL1KK** Carter, N. A. W., 50 Victoria Avenue, Whakatane. 3080
- ZL1KL** Cooper, H. G. T., 34 Omokoroa Road, Omokoroa. 3050
- ZL1KM** Murray, K. G., 5 Te Puia Street, Kamo, Whangarei. 0101
- ZL1KO** Ross, M. O., R.D. 1, Katikati. 3063
- ZL1KOB** Rasmussen, E. C., Highway 35, R.D. 1, Opotiki. 3092
- ZL1KP** Burgess, A. Bruce, 4 Killarney Street, Te Puke. 3071
- ZL1KQ** Small, J., 32 Paddington Street, Glen Innes, Auckland. 1006
- ZL1KR** Kleyburg, A., 20 Anderson Road, Hamilton. 2001
- ZL1KRH** Hampshire, K. R., 5 Sapphire Drive, Springfield, Tauranga. 3001
- ZL1KS** Smith, K., 142 Lynn Road, Glenfield, Auckland. 1310
- ZL1KSB** Bennett, S. J., 39 Addington Road, Manurewa, Auckland. 1702
- ZL1KSS** Spence, K. S., 1 Kaharoa Avenue, Omokoroa, Tauranga. 3050
- ZL1KT** Teviotdale, D. A., P.O. Box 7051, Rotorua. 3230
- ZL1KTM** Haldane, J. E. H., Jericho Road, R.D. 2, Pukekohe. 1800
- ZL1KU** Oliver, M. J., 2 Denham Way, Orewa, Auckland. 1461
- ZL1KV** Pooley, E. A., 2 Ayr Street, Waihi Beach. 3060
- ZL1KW** Kawerau Branch NZART (Inc), see Branch Directory
- ZL1KX** Walford, K. W., 354 Somme Parade, Aramoho, Wanganui. 5002
- ZL1KY** West, G. J., 12 Surf Road, Whangaparaoa. 1463
- ZL1KZ** Ellery, H. F., 26 Catalina Crescent, Takapuna, Auckland. 1310
- ZL1LA** Anderson, L. J., 19a Tui Glen Road, Birkenhead, Auckland. 1310
- ZL1LAT** Sylvester, R. L., 19 Ringwood Street, Torbay, Auckland. 1310
- ZL1LB** Laurent, Lyall, 54 Lagoon Drive, Panmure, Auckland. 1006
- ZL1LC** Bird, W. A., 239 Nelson Street, Invercargill. 9501
- ZL1LD** Williams, Pat, 144 Titirangi Road, New Lynn, Auckland. 1007
- ZL1LE** Egan, B., 12 Island View Terrace, Howick, Auckland. 1705
- ZL1LES** Savage, L. W., 155 Rifle Range Road, Taupo. 2730
- ZL1LEW** Thomas, C. L., 131 Astley Avenue, New Lynn, Auckland. 1007
- ZL1LF** Elder, J. W., P.O. Box 75, Temuka. 8752
- ZL1LFA** Atkinson, L. F., Kaimaumau Road, 1 R.D., Awanui. 0552
- ZL1LH** Cowie, D. J., 124 Albany Heights Road, Albany, Auckland. 1331
- ZL1LI** Hughes, P. D. P., 17 Oscar Road, Greenhithe, Auckland. 1450
- ZL1LIA** Hutley, D. A., 5 Westbourne Road, Remuera, Auckland. 1005
- ZL1LIN** Marr, L. J. (Mrs), 27 Houhere Place, Whangarei. 0101
- ZL1LJ** Scutts, L. J., c/- 509 Brown Street, Thames. 2801
- ZL1LK** Sargon, R. P., 2a Enderby Drive, Te Atatu North, Auckland. 1008
- ZL1LL** Cook, S., 27 Neville Street, Point Chevalier, Auckland. 1002
- ZL1LM** Marsden, A. N., 9 Wanaka Place, Pakuranga, Auckland. 1706
- ZL1LN** Simmons, A. L., 69 Roberts Avenue, Bayswater, Auckland. 1309
- ZL1LO** Robinson, I., 40 Masterton Road, Rothesay Bay, Auckland. 1310
- ZL1LP** Parsons, E. R., 509/1 Mutu Street, Te Awamutu. 2400
- ZL1LQ** Ramsay, Christine, 17 Westside Road, Port Waikato, R.D. 5, Tuakau. 1890
- ZL1LR** Anderson, P. C., 32 Gilmour Street, Waihi. 3061
- ZL1LS** McTurk, Esme, 40 Silverton Road, Waihi. 3061
- ZL1LT** Malcomson, Merv, 413 Frazer Street, Tauranga. 3001
- ZL1LU** Heslop, W. T., 19 Corinna Street, Welcome Bay, Tauranga. 3001
- ZL1LWC** Chandler, L. W., 158a Waihi Road, Judca, Tauranga. 3001
- ZL1LY** Brown, K. L., 38 Thompson Street, Tokoroa. 2392
- ZL1LZ** Dunwoody, M. L., 126 Bridgeman Road, Te Awamutu. 2400
- ZL1MAC** McKPike, B. G., 1/3 Bardia Street, Belmont, Auckland. 1309
- ZL1MAN** Bradshaw, D., 10 Manuawai Road, Torbay, Auckland. 1310
- ZL1MAR** Duncan, M., 16 Daffodil Street, Titirangi, Auckland. 1007
- ZL1MAX** Clear, M. R., Limmer Road, R.D. 8, Te Kowhai, Frankton. 2030
- ZL1MB** Farley, W. F., 8 Puriri Avenue, Te Puke. 3071
- ZL1MBW** Marshall, B. W., 94 Nile Road, Milford, Auckland. 1309
- ZL1MC** Hume, S. T., 61 Egmont Street, Ohauiti, Tauranga. 3001
- ZL1MCC** Manukau Civil Defence HQ, c/- Manukau City Council, Attn M. Lowry, Private Bag, Manukau City. 1730
- ZL1MCK** McKechenie, W. E., 77 Taikata Road, Te Atatu North, Auckland. 1008
- ZL1MD** McLellan, A. D., 11 Waitawa Place, Rotorua. 3201
- ZL1MDE** Derksen, M. H. A., 9 Riwai Street, Paraparaumu. 6450

ZL1MDS

ZL1MDS Digby-Smith, M. P., 6 Baird Avenue, Te Kauwhata. 2152
ZL1ME Geard, M., 1/30a Walter Street, Takapuna, Auckland. 1309
ZL1MF Crabtree, J. A., 2 Guadeloupe Crescent, Johnsonville, Wellington. 6004
ZL1MG Bretherton, Ted, 24 Illes Road, Rotorua. 3201
ZL1MGB Kenworthy, T. C., 15 Commissariat Road, Mt Wellington, Auckland. 1006
ZL1MH Hutchins, M. G. D., Peras Road, Waima, South Hokianga, Postal: Taheke Private Bag, Kaikohe. 0400
ZL1MI Warriner, A. D., c/- OSMU, RNZAF Base, Auckland PB, Whenuapai. 1250
ZL1MIN Lo, M. (Miss), P.O. Box 76-481, Manukau City, Auckland. 1730
ZL1MJ Schwass, B. R., 24 Mokorua Grove, Whakatane. 3080
ZL1ML Lee, M. E., 28 Seaview Road, Tawaipareira, Waiheke Island. 1240
ZL1MM Garde-Browne, M., Bowentown Road, Athenvee, R.D. 2, Katikati. 3063
ZL1MN Nisbet, D. I., 4 Williams Avenue, Kaikohe. 0400
ZL1MO Spackman, I. H., 124c Taylor Street, Blockhouse Bay, Auckland. 1007
ZL1MOM Worley, C. L., 35 Beach Road, R.D. 6, Te Puke. 3071
ZL1MP Poulton, G. G., 7 Rickard Place, New Lynn, Auckland. 1007
ZL1MQ Betson, C. W., 140 Golf Road, Green Bay, Auckland. 1007
ZL1MR Wilkins, D. F., P.O. Box 117, Papakura, Auckland. 1730
ZL1MRX Fuller, J., 86 Sunshine Road, Tauramunui. 2600
ZL1MS Inder, J. H., 19 Rushton Avenue, Otumoetai, Tauranga. 3001
ZL1MST Paton, J. S., 1 Tamariki Avenue, Kelston, Auckland. 1007
ZL1MT Minchin, H. E., Main Road, R.D. 1, Arapuni, Via Putaruru. 2370
ZL1MU Crooks, D. M., 13 Burrows Avenue, Karori, Wellington. 6005
ZL1MV Garrard, R. C., Whakanarama Road, R.D. 6, Tauranga. 3021
ZL1MW Huggard, B. F., 12 McClintock Road, Massey, Auckland. 1008
ZL1MX Currie, D. J., 127 Ridge Road, Howick. 1705
ZL1MY Carss, G. R., 18 Birch Place, Wanganui. 5001
ZL1MZ Karl, P. J., c/- Post Office, Ohaupo. 2452
ZL1NA Wilson, G. D., 1 Mt Roskill Road, Mt Roskill, Auckland. 1004
ZL1NAJ Harvey, K. A., 31 Western Hills Drive, Whangarei. 0101
ZL1NAK Knapper, G. G., 1/51 Waitangi Road, Onehunga, Auckland. 1006
ZL1NAL Ma heson, K. L. (Miss), Mata Road, Kohukohu, Northland. 0570
ZL1NAN Ramanui, P. C. (Mrs), 69 Hinemoa Street, Whakatane. 3080
ZL1NAS Williams, A. (Mrs), 51 Rhonda Avenue, Hamilton. 2001
ZL1NAT Godden, R. P., 12 Princes Street, Waihi. 3061
ZL1NAW Byrnes, J. L., 14 Sunset Crescent, Tauranga. 3001
ZL1NB Hitch, G. W., Rawhiti Road, R.D. 4, Hikurangi. 0251
ZL1NC Miller, J. G., 31 Sierra Street, Glenowrie, Auckland. 1005
ZL1NF Garrett, R., 13 Rock Isle Road, Torbay, Auckland. 1310
ZL1NG Muller, J., 1/7 Newhaven Terrace, Mairangi Bay, Auckland. 1310
ZL1NGQ Atkins, R., 74 Awatapu Drive, Whakatane. 3080
ZL1NH White, N. R., 33 Norton Road, Otumoetai, Tauranga. 3001
ZL1NHQ Wardell, G. A., 112 Maniahi Street, Tokoroa. 2392
ZL1NJ Ecclesfield, B. D., 43 Maithi Crescent, Tauranga. 3001
ZL1NJZ Davison, P. J., P.O. Box 16, Waikino. 3060
ZL1NK Mander, N. K., 38 Arundel Street, Mt Roskill, Auckland. 1004
ZL1NKM Kane, M. (Mrs), 8 Lancelot Road, Orewa. 1461
ZL1NM Mee, Nigel, Private Bag, Orere Point, Papakura. 1750
ZL1NN Douglas, J. W., 91 Churchill Road, Rothesay Bay, Auckland. 1310
ZL1NP Pearl, L. C., 15 Tole Street, Ponsonby, Auckland. 1001
ZL1NPP Sturgess, A. E. (Mrs), 2/18 Meadowland Drive, Howick, Auckland. 1705
ZL1NQ Barrell, S. J., P.O. Box 7036, Tikipunga, Whangarei. 0133
ZL1NS Hickey, John, P.O. Box 135, Neiafu, Kingdom of Tonga
ZL1NSY Coppell, S. P., 128a James Street, Whakatane. 3080
ZL1NT Hill, B. J., P.O. Box 804, Hamilton. 2015
ZL1NTF Hall, T. F., Happy Valley Road, R.D. 3, Te Awamutu. 2400
ZL1NU Griffiths, K. B., 64 Arawa Street, New Lynn, Auckland. 1007
ZL1NUB Bullen, V. W. (Mrs), 32 Otumoetai Road, Tauranga. 3001
ZL1NV Jackson, B. T., Albany Heights Road, R.D. 2, Albany. 1331
ZL1NW Goldfinch, R. C., 3 Ellerslie Avenue, Chedworth, Hamilton. 2001
ZL1NX Baveystock, S. Q., 2 Fraser Street, Tauranga. 3001
ZL1NY Orr, N. A., 2/34 Prospect Terrace, Milford, P.O. Box 31-433, Milford. 1330
ZL1NZ Blyde, J. V., 96 Barry Road, Waihi. 3061
ZL1OB Booth, O. R., 40a Esk Street, Tauranga. 3001
ZL1OC Shaw, Vicki, P.O. Box 2088, Whakatane. 3080
ZL1OD Wallace, J. A. L., 355 Gluepot Road, R.D. 3, Tauranga. 3021
ZL1OF Wapp, A., 14 Country Club Lane, Waiuku. 1852
ZL1OG Gabbie, O. J., FEBC, P.O. Box 209, Saipan MP-96950
ZL1OH Fairhead, A. D., The Eyrie, R.D. 4, Papakura. 1730

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ZL1OJ Dowling, H. J., 52 Aurora Terrace, Hillcrest, Hamilton. 2001
ZL1OK Hill, R. S., 12 Hunt Crescent, Rotorua. 3201
ZL1OL Oliver, B. M., P.O. Box 40-266, Glenfield, Auckland. 1330
ZL1OM Windsor, K. W., 36 Chatswood Grove, Birkenhead, Auckland. 1310
ZL1ON Eglinton, G. K., 47a Ridge Road, Otumoetai, Tauranga. 3001
ZL1ONE Lake, J. R. (Ms), 138 Wellington Street, Opatiki. 3092
ZL1OO Dreaver, B. G. W., 5 Essex Street, Te Atatu South, Auckland. 1008
ZL1OP Powell, Fred, 60 Union Street, Opatiki. 3092
ZL1OQ Renfrew, H. F., 16b Riverndell Place, Warkworth. 1241
ZL1OR Mullions, R. E., 35 Riverview Road, Morrinsville. 2251
ZL1OS Osborne, B. A. (Mrs), 34 Cobham Drive, Kawerau. 3083
ZL1OT Evans, R. J., P.O. Box 175, Kaeo. 0471
ZL1OTR Revington, O. T., 6 Stafford Place, Palmerston North. 5301
ZL1OU Berry, D. C., 47d Kingsway Avenue, Sandringham, Auckland. 1003
ZL1OV Kirton, F. N., 1/12 Stewart Gibson Place, Manurewa. 1702
ZL1OVV Hartley, K. D., 34 Lorelei Place, Opaheke, Papakura. 1750
ZL1OW Burrows, J. W. L., c/- Post Office, Greerton, Tauranga. 3030
ZL1OX Crawley, H. V., 5/238 Onewa Road, Birkenhead, Auckland, P.O. Box 34-075, Birkenhead. 1330
ZL1OY Mudford, K. H., 11 Kaimai Drive, Matamata. 2271
ZL1OZ Skinner, B. J., c/- 72 Hyde Avenue, Taupo. 2730
ZL1PAM Blackett, P. H., 56 Church Street, Northcote, Auckland. 1309
ZL1PB Brown, P., 5-9 Duke Street, Putaruru. 2371
ZL1PC Slako, P. W., Oakleigh, R.D. 1, Whangarei. 0121
ZL1PE Erceg, P. J., 8 Lake Ora Road, Three Mile Bush Road, Kamo, Whangarei. 0131
ZL1PF McGregor, K. J., 14 Carnegie Crescent, Hobsonville. 1250
ZL1PG Morgan, J. A., 38 Deardon Road, Manurewa. 1702
ZL1PH Yates, Cathy, Linwood Road, Karaka, R.D. 1, Papakura. 1750
ZL1PI McDonald, A. K., 17 The Glebe, Coastlands, Whakatane. 3080
ZL1PJ Dare, P. H., 28a Wharenuui Road, Rotorua. 3201
ZL1PK King, P. D., 11 Salmond Place, Hamilton, P.O. Box 126, Hamilton. 2015
ZL1PL Grise, M. J., 109 Norwood Road, Bayswater, Auckland. 1309
ZL1PM Perfect, J. J., 8 Otuhuiwai Crescent, Tikipunga, Whangarei. 0101
ZL1PN Sheather, P., 25 Louvain Street, Whakatane. 3080
ZL1PP Dekker, P., 118 Albany Heights Road, R.D. 2, Albany. 1331
ZL1PR Carter, P. R., 2 Harford Place, Pakuranga, Auckland. 1706
ZL1PS Brown, T. G., 32 Hilston Place, Onehunga, Auckland. 1006
ZL1PT Twiss, D. P. L., 35 Rimu Street, Tauranga. 3001
ZL1PV Gulde, N. G., 182 Bell Avenue, Tauranga. 3001
ZL1PW Wrigley, P. H., 34 Clifford Street, Kaikohe. 0400
ZL1PWS Savage, P. W., 155 Rifle Range Road, Taupo. 2730
ZL1PX Martin, H. L., 25 Cockayne Crescent, Sunnybrook, Auckland. 1310
ZL1PZ Sexton, I. M., 10 Fair Oaks, Pukekohe. 1800
ZL1QB Manukau Branch NZART (Inc), see Branch Directory
ZL1QC Strachan, J. M., 4 Newburn Road, Browns Bay, Auckland. 1310
ZL1QG Morris, D. C., 5 Woodside Road, Henderson, Auckland. 1008
ZL1QH Cooke, S. R., 11 Ashlynn Avenue, Papatoetoe, Auckland. 1701
ZL1QI Gillett, P. A., P.O. Box 3074, Tauranga. 3030
ZL1QJ Nissen, K. H., Back Street, Opa. 0290
ZL1QK Stone, Bill, 5 Winslowe Place, Papakura. 1703
ZL1QL Borck, Laurie, 28 Denby Crescent, Tikipunga, Whangarei. 0101
ZL1QM Ockleston, G. W., 17 Bracken Avenue, Epsom, Auckland. 1003
ZL1QN Hedges, K., 244 Titirangi Road, New Lynn, Auckland. 1007
ZL1QO Edwosson, B. W., 9 Sanctuary Point, Pakuranga. 1706
ZL1QP Breden, J. E., 27 Moehau Street, Te Puke. 3071
ZL1QQ Shaw, A. A., P.O. Box 5461, Lambton Quay, Wellington. 6040
ZL1QS Mason, J. F., 59 Lancaster Road, Birkdale, Auckland. 1310
ZL1QT Morris, P. S., 13 Ransom Smyth Drive, Manukau City, Auckland. 1701
ZL1QW Waihi Branch NZART (Inc), see Branch Directory
ZL1QX Mowat, G. C., 37 Cliff Road, St Heliers, Auckland. 1005
ZL1QY Williams, R. G., 67a Botanical Road, Tauranga. 3001
ZL1QZ Rhodes, M. C. L., 13a Rutherford Terrace, Meadowbank, Auckland. 1005
ZL1RA Swain, R. A., 9 Paekitawhiti Street, Turangi. 2751
ZL1RAF Farrant, R. A., 1/27 Holland Road, Glenfield, Auckland. 1310
ZL1RAW Williams, R. A., 47 Arthur Street, Ellerslie, Auckland. 1005
ZL1RB Boggiss, R. J., P.O. Box 152, Waihi. 3061
ZL1RBG Rosch, B., 1 Rangitoto Terrace, Milford, Auckland. 1309
ZL1RC Saunders, A. G., 14 Queenwood Avenue, Hamilton. 2001

- ZL1RD** Leinwand, Rob, 5 Carina Crescent, Torbay, Auckland. 1310
ZL1RE Phillips, E. L., 3/401 Main North Road, Christchurch. 8005
ZL1RF Matamata Amateur Radio Club, see Branch Directory
ZL1RG Jones, M. N., 96 Russell Road, Huntly. 2191
ZL1RGR Rowe, R. G., 32 Manawa Road, Remuera, Auckland. 1005
ZL1RH Claridge, A. R. C., Care and Independence, 19 Liston Avenue, Taupo. 2730
ZL1RI McLaughlin, J., 60 Awatere Avenue, Beerescourt, Hamilton. 2001
ZL1RIC Steegstra, R., c/- PDC, Ngunguru, Private Bag, Whangarei. 0250
ZL1RJ Jarlov, R. W. E., 85 Mallard Drive, Rotorua. 3201
ZL1RJM Moore, R. J., 67 Matakatia Parade, Whangaparaoa, Auckland. 1463
ZL1RL Langridge, R. A., 16 Jellicoe Street, Whangarei. 0101
ZL1RM Jeffs, J. F. C., 5 Willowfield Place, Hamilton. 2001
ZL1RN Lewis, K. J., 168 Ellis Street, Frankton, Hamilton. 2001
ZL1RNF Francis, R. N., 4 Essex Street, Henderson, Auckland. 1008
ZL1RO Knox, A. T., 11 Hasbury Avenue, Epsom, Auckland. 1003
ZL1RON Miller, R. P., P.O. Box 3012, Onerahi, Whangarei. 0132
ZL1ROT Rotorua Branch NZART (Inc.), see Branch Directory
ZL1RR Ryan, D. F., 129 Cook Street, Howick. 1705
ZL1RRV Harvey, R. F., 33 Birdwood Avenue, Papatoetoe. 1701
ZL1RS Sutton, R. J., 109 Wright Road, R.D. 2, Katikati. 3063
ZL1RSE Eyre, R. S., 5 Tennyson Street, Whangarei. 0101
ZL1RT Maginnity, D., 7 Kentucky Crescent, Newton, Hamilton. 2001
ZL1RU Gooch, G. M., 39 Benbow Street, St Hilers, Auckland. 1005
ZL1RUA Todd, R. T., Private Bag 932, Kawau Island. 1240
ZL1RUM Northland Contest Group, Mr K. A. Bell, 62b Eden Terrace, Kamo, Whangarei. 0101
ZL1RV Gilbert, J. L., 3/22 Clonbern Road, Remuera, Auckland. 1005
ZL1RW Wilson, R. M., "Longwood" Anderson Road, R.D. 5, Warkworth. 1241
ZL1RWB Barraud, R. W., 85 Target Road, Glenfield, Auckland. 1310
ZL1RWJ Johnson, R. W., 8 Graham Street, P.O. Box 33, Te Kopuru. 0356
ZL1RWM McNamara, R. W., P.O. Box 429, Opotiki. 3092
ZL1RX Wighton, G. M., 52 Ainsworth Road, c/- Post Office, Bethlehem. 3050
ZL1RY Shimmmin, R. L., 130 Union Road, Howick, Auckland. 1705
ZL1RZ Johnstone, A. R., 74 Waimumu Road, Massey, Auckland. 1008
ZL1SA Franklin Branch NZART (Inc), see Branch Directory
ZL1SB Sapich, S., 148 Forest Hill Road, Henderson, Auckland. 1008
ZL1SC Corrigan, M. L., P.O. Box 40-135, Glenfield, Auckland. 1330
ZL1SD Colquhoun, R. D., 32 Valley Road, Mt Eden, Auckland. 1003
ZL1SET Tobin, S. E., 5 Williams Avenue, Kaikohe. 0400
ZL1SF Cooper, M. A., 27 West Street, Hamilton. 2001
ZL1SG Cowie, C. A., Stratford Drive, Cable Bay, R.D. 3, Kaitia. 0500
ZL1SH Adair, M. W., 41 Seavista Avenue, Birkdale, Auckland. 1310
ZL1SI Caskie, W. I., Flat 3, 461 Blockhouse Bay Road, Blockhouse Bay, Auckland. 1007
ZL1SJ Holmes, G. C., P.O. Box 82-043, Highland Park, Auckland. 1730
ZL1SK Thomas, M. R., 52 Bolland Avenue, Avondale, Auckland. 1007
ZL1SKC Saint Kentigern College, P.O. Box 51-060, Pakuranga. 1730
ZL1SL Biddick, P. N., 11 Flinders Place, Tauranga. 3001
ZL1SM Droge, H., 9 Preston Avenue, Mt Albert, Auckland. 1003
ZL1SO Miller, R. L., 52 Hinekura Avenue, Taupo. 2730
ZL1SP Bain, Fred, 58 George Crescent, Buckland, R.D. 2, Pukekohe. 1800
ZL1SQ Van Den Heuvel, T., 9 Laing Place, Otumoetai, Tauranga. 3001
ZL1SR Coppel, B. L., 128a James Street, Whakatane. 3080
ZL1SS Skellon, D. B., 36 Mountbatten Avenue, Glenfield, Auckland. 1310
ZL1ST Smith, N. E., c/- 36 Moa Road, Point Chevalier, Auckland. 1002
ZL1SU MacDiamid, D. R. N., Kilchurn House, Pungaere Road, R.D. 2, Kerikeri. 0470
ZL1SV Perkins, J. A., 2 Ponui Place, Mairangi Bay, Auckland. 1310
ZL1SVD Duoba, S. V., 36 Karaka Road, Waiheke Island, Auckland. 1240
ZL1SX Kirkham, A. L., 38 Waller Avenue, Bucklands Beach. 1704
ZL1SY Thompson, Murray, 13 McDowell Street, Rotorua. 3201
ZL1SZ Evans, M. J., 14 Henderson Street, Whakatane. 3080
ZL1TA Mortensen, N. R., 16 Melrose Road, Hillsborough, Auckland. 1004
ZL1TAA Miller, N. S., 343b Te Rapia Road, Hamilton. 2001
ZL1TAB Austin, M. A. (Mrs), 16 Disraeli Street, Mt Eden, Auckland. 1003
ZL1TAC Ramsay, D. J., P.O. Box 559, Whakatane. 3080
ZL1TAD Johnston, R. B., 3 Beere Place, Meadowbank, Auckland. 1005
ZL1TAE Ristic, A. T., Buckland Road, R.D. 4, Tuakau. 1892
ZL1TAF Anderson, Anne, 32 Gilmour Street, Waihi. 3061
ZL1TAG Plimley, A. E., 104 Porawai Road, Thames. 2801
ZL1TAI McBurney, R. T., 25 Hamilton Road, Papatoetoe. 1701
ZL1TAJ Ellis, N. M., P.O. Box 1020, Tauranga. 3015
ZL1TAK Sergeant, P. A., 20 Marie Avenue, Te Atatu South, Auckland. 1008
ZL1TAL Burrage, D. A., 87 Kauri Point Road, Laingholm, Auckland. 1007
ZL1TAM Teh, Y. W. (Dr), 18 Augusta Place, Kamo, Whangarei. 0101
ZL1TAN O'Callaghan, D. R., Private Bag 93-211, Parnell, Auckland. 1033
ZL1TAO Kimber, W. C., 50 Main Road, Titahi Bay, Wellington. 6006
ZL1TAP Adams, R. J. J., 5 Huntingtree Avenue, Mt Albert, Auckland. 1003
ZL1TAQ Logan, H., 118 Elliot Street, Papakura. 1703
ZL1TAR Wilkinson, R. N., 19 Island Bay Road, Beachhaven, Auckland. 1310
ZL1TAS Aymes, A. O., 6 Deanna Avenue, Morrinsville. 2251
ZL1TAT Brown, I. W., 35 Lancaster Street, Hamilton. 2001
ZL1TAU Coghlan, P. R., 18 Essex Street, Te Atatu South, Auckland. 1008
ZL1TAV Small, B. C., 62 Pace Avenue, Sandringham, Auckland. 1003
ZL1TAX Andrews, S. D., 15 Mulberry Place, Glenfield, Auckland. 1310
ZL1TAY Thornton, D., 12 Rahui Road, Greenhithe, Auckland. 1450
ZL1TAZ Purdy, G. N., 36a Pleasant Road, Glen Eden, Auckland. 1007
ZL1TB Howick and District Branch NZART (Inc), see Branch Directory
ZL1TBA Parsons, D. R., 178 Mutu Street, Te Awamutu. 2400
ZL1TBB Carter, R., 1218 Huia Road, Huia, Auckland. 1250
ZL1TBC McIsaac, D. V. G., 11 Middlesex Road, Waterview, Auckland. 1007
ZL1TBD Davies, R. G., 15255 N. Frank Lloyd Wright Blvd, #1004, Scottsdale, AZ, USA
ZL1TBE Essipov, B., Meadow Court Motel, P.O. Box 23-001, Papatoetoe, Auckland. 1730
ZL1TBF Faulkner, R. J. (Mrs), 4/23 Boyd Avenue, Royal Oak, Auckland. 1006
ZL1TBG Sanson, R. G., 55 Bertram Street, Warkworth. 1241
ZL1TBH Avery, S. C., 22 Achilles Crescent, Tauranga. 3001
ZL1TBI Cowan, T. J., 28 Mountbatten Avenue, Glenfield, Auckland. 1310
ZL1TBJ Burrows, J. J., 2/2 West Lynn Road, New Lynn, Auckland. 1007
ZL1TBL McKenzie, C. T., 2 Irene Avenue, Mt Eden, Auckland. 1004
ZL1TBN Sanders, P., Newells Road, R.D. 3, Hamilton. 2021
ZL1TBP Croll, D., 25 Pouwhare Street, Whakatane. 3080
ZL1TBQ Angell, A. R., 49b Crane Street, Mt Maunganui. 3002
ZL1TBR McIntyre, R., 3 Tihl Road, Rotorua. 3201
ZL1TBS Smith, L. J., 123 Sandspit Road, Howick, Auckland. 1705
ZL1TBT Thompson, A. B., 68a Willis Road, Papuranga, Auckland. 1706
ZL1TBV Russ, G. M. (Miss), 73 Pine Street, Belmoral, Auckland. 1004
ZL1TBW Winger, B. S., P.O. Box 1532, Whangarei. 0115
ZL1TBX Bott, A. D., P.O. Box 11-056, Ellerslie, Auckland. 1131
ZL1TBY Secombe, J. G., Oaklands Road, R.D. 1, Papakura. 1730
ZL1TBZ Tatton, W. C., 7 Realm Place, Massey, Auckland. 1008
ZL1TC Metcalfe, A. D., 24 Hogan Street, Hamilton. 2001
ZL1TCA Allen, C. J., 21 Arran Road, Hamilton. 2001
ZL1TCB Shackleton, D. A., 17 George Street, Kingsland, Auckland. 1003
ZL1TCC Topfer, K. K., 11 Edith Place, Hamilton. 2001
ZL1TCD Hallett, J. R., Okahu Road, R.D. 1, Kaitia. 0500
ZL1TCE Nation, D. L., 54 Prisk Street, Hamilton. 2001
ZL1TCF Fortune, T. La T., 129 Bleakhouse Road, Howick. 1705
ZL1TCG Neal, S. G. M., 40 Rodney Street, Wellsford. 1242
ZL1TCH Nielsen, D., 70b Moore Street, Howick, Auckland. 1705
ZL1TCI Grange, D. L., P.O. Box 80-026, Green Bay, Auckland. 1230
ZL1TCJ Jackson, L. H., 5 Ripon Crescent, Meadowbank, Auckland. 1005
ZL1TCK Woolley, M. G., 5a Springbank Lane, Te Atatu North, Auckland. 1008
ZL1TCL Richards, S. C., P.O. Box 80-076, Green Bay, Auckland. 1230
ZL1TCM McGlashan, I., Kahikatea Flats Road, R.D. 1, Kāukapaka, Helensville. 1250
ZL1TCN Herbert, E. R., Site 6, Caralease Park, Emerton Road, Waihi Beach. 3060
ZL1TCO Tapp, A. J., P.O. Box 1669, Whangarei. 0115
ZL1TCP Mattler, J. L., 25 Seddon Street, Te Kuiti. 2500
ZL1TCR Bell, K. G., 174 Carnoustie Drive, Wattle Downs, Manurewa, Auckland. 1702
ZL1TCS Billing, C. I. (Mrs), 2 Norfolk Terrace, Whangaparaoa, Auckland. 1463
ZL1TCT Dennison, R. A., 20 Oxtan Road, Sandringham, Auckland. 1003
ZL1TCU Legg, M. E., 20 Harbour Lights Close, Hobsonville, Auckland. 1008

ZL1TCV

ZL1TCV Frazerhurst, W. K., 12 Loloma Drive, Bucklands Beach. 1704

ZL1TCW Watson, C. D., 15 Mack Place, Papakura, Auckland. 1730

ZL1TCX Taylor, A. J., 56 Mayfair Crescent, Mairangi Bay, Auckland. 1310

ZL1TCZ Turnwald, F. L. (Mrs), 29 Cliff View Drive, Green Bay, Auckland. 1007

ZL1TDA Shackleton, R. D., 17 George Street, Kingsland, Auckland. 1003

ZL1TDB Raffles, Margaret, 54 Rockfield Road, Ellerslie, Auckland. 1005

ZL1TDC Purves, G. S., 480 Cambridge Road, Te Awamutu. 2400

ZL1TDE Davis, W. L., 48 Chatsworth Crescent, Pakuranga, Auckland. 1706

ZL1TDF Blair, D. J., 15 Tramway Road, Birkdale, Auckland. 1310

ZL1TDG Morris, V., 116 Union Road, Howick, Auckland. 1705

ZL1TDH Dunsbee, B. L., Gun Club Road, R.D. 1, Pukekohe. 1800

ZL1TDI Lee, C. P., 117 Chelsea View Drive, Birkenhead, Auckland. 1310

ZL1TDJ Burton, R. D., 11 Henderson Valley Road, Henderson, Auckland. 1008

ZL1TDK Gotz, M. T., 14 Roosevelt Road, Rotorua. 3201

ZL1TDL Littin, A. C., Maeneene Road, R.D. 5, Wellsford. 1242

ZL1TDP Clough, S. D., 5 Kelly Street, Rotorua. 3201

ZL1TDQ Woodfield, Dave, 5 Karen Lane, Beckenham, Christchurch. 8002

ZL1TDR Harding, B. D., 40b McIntock Street, Johnsonville West, Wellington. 6004

ZL1TDS Wright, M. E. (Ms), 130 James Street, Whakatane. 3080

ZL1TDU Allan, P. K., 12 High Street, Whangarei. 0101

ZL1TDV Penwarden, E. C., 13 Kupe Place, Tokoroa. 2392

ZL1TDW Bulough, E. G., 20 Coldham Crescent, Meadowbank, Auckland. 1005

ZL1TDX Turnbull, G. R. H., 159 Bucklands Beach Road, Bucklands Beach. 1704

ZL1TDY Walker, H. E. (Mrs), 707 Richardson Road, Hillsborough, Auckland. 1004

ZL1TDZ Miller, C. J., 13a Omaha Road, Remuera, Postal: P.O. Box 128-152, Remuera, Auckland. 1136

ZL1TE Lynneberg, R., 15 Terwaha Street, Turangi. 2751

ZL1TEA Morton, K. W., 41 Aroha View Avenue, Te Aroha. 2971

ZL1TEF Rodgers, B. J., 19 Cradock Street, Avondale, Auckland. 1007

ZL1TEK Cope, J. R., 83 Russell Road, Huntly. 2191

ZL1TEL Rennett, C. M., 72 The Crescent, Waihi Beach. 3060

ZL1TEM Gulliver, Edith, 43a Te Ahuahu Road, R.D. 2, Piha, Auckland. 1250

ZL1TEP Rankin, D. J., P.O. Box 12-557, Penrose, Auckland. 1135

ZL1TER Middleton, T., P.O. Box 175, Paeroa. 2951

ZL1TES Bruce, K. W., 37 Japonica Avenue, Birkdale, Auckland. 1310

ZL1TEV Barnett, D. S., 16 Pembroke Street, Moerewa. 0292

ZL1TEX Sands, J. E., 86 Oakdale Road, Hillsborough, Auckland. 1004

ZL1TEY McDonald, M. S., 52 Cargill Street, Papakura. 1703

ZL1TF Morrison, I. McG., 183 The Sycamores, Milton, Cambridge, UK CB46ZH

ZL1TFA Schwarz, B. A., 6 Leeds Street, Hamilton. 2001

ZL1TFB Cooper, S. W., 41a Kelvin Road, Papakura. 1703

ZL1TFC Godfrey, J. P., 15 Crompton Road, Massey, Auckland. 1008

ZL1TFD Iversen, R. J., 1/3 Akehurst Avenue, New Lynn, Auckland. 1007

ZL1TFF Dreadon, A. H., 22 Apple Terrace, Ranui Heights, Wellington. 6006

ZL1TFG Ballantyne, D. L., Bush Road, Albany, P.O. Box 28, Auckland. 1331

ZL1TFH Swift, D. M., 42 Sherwood Road, Onerahi, Whangarei. 0101

ZL1TFI Needham, G. M., 4 Albatross Road, Red Beach, Auckland. 1461

ZL1TFJ Enersen, F. J. C., 20 Brookfield Terrace, Otumoetai, Tauranga. 3001

ZL1TFL Hawkes, R. G., 26 Penzance Road, Mairangi Bay, Auckland. 1310

ZL1TFM Sommerville, B. G., 44 Dickens Street, Grey Lynn, Auckland. 1002

ZL1TFO Baine, C. J., Main Road, P.O. Box 1, Broadwood. 0571

ZL1TFP Purdy, R. G., 41 John Davis Road, Mt Roskill, Auckland. 1004

ZL1TFS Fitzpatrick, Hilary, Lake Rotoma, R.D. 4, Rotorua. 3221

ZL1TFT Thomson, L. F., 9k 205 Hobson Street, Auckland. 1001

ZL1TFV White, P. R., 39 Page Street, Morrinsville. 2251

ZL1TFW Savage, J., 151 Valley Road, Henderson, Auckland. 1008

ZL1TFX Rowe, R. A., 422 Thames Street, Morrinsville. 2251

ZL1TFZ Sexton, G. J., 7 Kingsclere Place, Manukau, Auckland. 1701

ZL1TG Rumming, E., 50 Corlett Street, Rotorua. 3201

ZL1TGA Haley, A. M. E., 30 Buckingham Crescent, Papatoetoe. 1701

ZL1TGB Burrage, G. J., 2/11 Landseer Place, Blockhouse Bay, Auckland. 1007

ZL1TGC Henderson, V. N., 217 Glenfield Road, Glenfield, Auckland. 1310

ZL1TGD Topping, R. M., Airport Road, R.D. 3, Tamahere, Hamilton. 2021

ZL1TGE Currin, B. K., 2 Bryant Place, Glendowie, Auckland. 1005

ZL1TGF Mullions, B. A. (Mrs), 35 Riverview Road, Morrinsville. 2251

ZL1TGG Sopitt, T. R., 73 Astley Avenue, New Lynn, Auckland. 1007

ZL1TGJ Dick, G. W., 2/30 Inkerman Street, Royal Oak, Auckland. 1006

ZL1TGK Caulfield, R. E., P.O. Box 49-045, Mt Roskill South, Auckland. 1030

ZL1TGL Burnnand, T. T., 19 Sylvia Road, St Heliers Bay, Auckland. 1005

ZL1TGM Nicholson, R. D., c/- 2 Signals Squadron, Linton Army Camp, Palmerston North. 5450

ZL1TGN Lindop, P. R., 3/26 Hawkins Street, Meadowbank, Auckland. 1005

ZL1TGP Bielby, R. K., 4 Bennett Road, Pakuranga. 1706

ZL1TQG Shackleton, E. G., Hillcrest Road, P.O. Box 22, Kaitia. 0500

ZL1TGR Hoole, G. L., 111 Buckland Street, Putaruru. 2371

ZL1TGS Smith, J. M., 2/38 Sunderlands Road, Bucklands Beach, Auckland. 1704

ZL1TGT Bain, S. G., 1/22 Grand Drive, Remuera, Auckland. 1005

ZL1TGV Holmes, B. S., Coast Road, R.D. 3, Waiuku. 1852

ZL1TGW Watson, E. H. C., "Thornton" 41 Eastbank Road, R.D. 3, Whakatane. 3080

ZL1TGX McNamara, Anne, 32 Galileo Street, P.O. Box 8, Ngaruawahia. 2171

ZL1TGZ Purvis, A. W., P.O. Box 142, Waihi. 3061

ZL1THB Phayer, C., 4 Korimako Place, Tokoroa. 2392

ZL1THC Chang, H., 6 Heaphy Street, Blockhouse Bay, Auckland. 1007

ZL1THD Turner, R. W., P.O. Box 381, Te Kuiti. 2500

ZL1THE Fletcher, D. O., 24 Guy Road, Kaikohe. 0400

ZL1THF Kirkman, B. A., "Cartgate", S.H. 22, Glen Murray, R.D. 5, Taupau. 1892

ZL1THG Bevan, T. M., 3 Glendale Drive, Hamilton. 2001

ZL1THJ Paul, R. E., 8 Quebec Road, Milford, Auckland. 1309

ZL1THK Russell, J. A., 1/29 Clonburn Road, Remuera, Auckland. 1005

ZL1THL Piper, G. L., 16 Samuel Place, Hamilton. 2001

ZL1THN Crozier, D. K., 154 Grey Street, Onehunga, Auckland. 1006

ZL1THO McNeil, D. R., 33 Eivers Road, Whakatane. 3080

ZL1THQ Tunnicliffe, G. O. L. J., 9 School Road, Ngongotaha. 3202

ZL1THU Cooke-Willis, S. O., 15 Madras Street, Khandallah, Wellington. 6004

ZL1THV Crawford, G., 42 Forest Lake Road, Hamilton. 2001

ZL1THW Thwaites, I. G., 3/3 Hubert Henderson Place, Remuera, Auckland. 1005

ZL1TI Godkin, I. P., c/- Ms A Godkin, Flat B 10 Lymington Road, West Hampstead, London NW61HY, England

ZL1TIA Dingley, D. G., 2139 Great North Road, Avondale, Auckland. 1007

ZL1TIB Dobbie, C. H., 30 Faulder Avenue, Westmere, Auckland. 1002

ZL1TIC Coles, R. I., R.D. 2, Putaruru. 2371

ZL1TIF Callaghan, P. J., P.O. Box 100-735, North Shore Mail Centre, Auckland. 1330

ZL1TIG Palmer, L. H., 10 Puketapu Crescent, Taumarunui. 2600

ZL1TII O'Brien, K. M. J., 10 Murray Place, Lincoln. 8152

ZL1TIJ Alley, W. J., Private Bag, Te Kaha. 3093

ZL1TIK Mowry, L. E., 25 Warwick Place, Brookfield, Tauranga. 3001

ZL1TIL Clarke, W. D., 21 Fruitvale Road, New Lynn, Auckland. 1007

ZL1TIN Taylor, K. L., 7 Poihaere Street, Turangi. 2751

ZL1TIO Bowers, S., 21 Hingia Street, Turangi. 2751

ZL1TIP Hickson, D. L., c/- King Country EPB, P.O. Box 363, Taumarunui. 2600

ZL1TIQ Watson, J. R., 19 Tania Place, Blockhouse Bay, Auckland. 1007

ZL1TIR MacLardy, W. J., South Highway, P.O. Box 87, Whitianga. 2856

ZL1TIS Wadham, D. R. A., 889 Whangaparaoa Road, Little Manly, Whangaparaoa. 1463

ZL1TIU Parker, D. W., 99 Balmoral Road, Mt Eden, Auckland. 1004

ZL1TIX Quinn, K. (Mrs), 14 The Cres, Waihi Beach. 3060

ZL1TIZ Gordon, M. B., 34 Pallant Street, Manurewa. 1702

ZL1TJ Matthys (Snr), J. K. C., 2 Thwaites Place, Cambridge. 2351

ZL1TJA Powell, A. T., 336 Te Rapa Road, Hamilton. 2001

ZL1TJB Watt-Wyness, S. C., 1 Wynsfield Garden, St Heliers, Auckland. 1005

ZL1TJC Phayer, J., 4 Korimako Place, Tokoroa. 2392

ZL1TJE Richardson, Wendy, 4 Redcrest Avenue, Papakura. 1703

ZL1TJF Fraknovary, G. A., 10 Canberra Avenue, Lynfield, Auckland. 1004

ZL1TJG French, T. G., 13 Bannerman Road, Western Springs, Auckland. 1002

ZL1TJH Gyde, G. N., 11 McCracken Avenue, Hamilton. 2001

ZL1TJI Batkin, D. B., Batkin Road, R.D. 4, Papakura. 1730

ZL1TJJ Dennis, J. M. (Mrs), c/- Happy Angler Store, Private Bag, Mourea, Rotorua. 3250

ZL1TJK Munden, A. J., 24 Paraoonui Road, Tokoroa. 2392

ZL1TJL Lennard, J. P., 4 Cullen Crescent, Tokoroa. 2392

- ZL1TJM** McPherson, G. J., 49 Heybridge Street, Manurewa. 1702
ZL1TJN Simmonds, H. J. (Rev), 9 Riverpark Crescent, Henderson, Auckland. 1008
- ZL1TJP** Ingram, J. P., 20a Kulim Avenue, Tauranga. 3001
ZL1TJQ King, K. G., P.O. Box 25-225, St Heliers, Auckland. 1130
ZL1TJR Trickett, N. D., 42 Riddell Road, Glendowie, Auckland. 1005
- ZL1TJS** McWilliams, D. J., 54 Allenby Road, Papatoetoe. 1701
ZL1TJT Manning, A. R. (Mrs), R.D. 5, Te Mawhai, Te Awamutu. 2400
- ZL1TJU** Dawson, D. H., 22a Pah Road, Cockle Bay, Auckland. 1704
ZL1TJX Black, C. W., 91 Tiverton Road, Avondale, Auckland. 1007
ZL1TJY Hall, P. J., 10 Ryle Street, Freemans Bay, Auckland. 1001
ZL1TK Harrington, R. J., P.O. Box 10-5376, Auckland Central, Auckland. 1030
- ZL1TKA** Hindmarsh, R. J., 78 Kelvin Road, Papakura. 1703
ZL1TKB Shaw, A. G., 25 Blackburn Street, Hamilton. 2001
ZL1TKC Pointon, G. V., 6 Hoheria Road, Onehunga, Auckland. 1006
ZL1TKD Gill-Fox, D. A. (Mrs), 38 Moore Street, Glenfield, Auckland. 1310
- ZL1TKE** Clark, D. W., 29 Puriri Road, Whenuapai Village. 1250
ZL1TKF Treadaway, R. E., P.O. Box 56-425, Dominion Road, Auckland. 1030
- ZL1TKG** Talbot, V. G., 93a Pembroke Street, Hamilton. 2001
ZL1TKI Savage, B. J., 2/9 Harbour View Road, Point Chevalier, Auckland. 1002
- ZL1TKJ** Robinson, C. S., 80 Panapa Drive, Meadowbank, Auckland. 1005
- ZL1TKK** Murphy, B. R., 13 John Dee Crescent, Red Beach. 1461
ZL1TKL Meads, D. R., 78 Hillcrest Road, Whakatane. 3080
ZL1TKM Fortune, K. M., 215 Centaurus Road, St Martins, Christchurch. 8002
- ZL1TKN** Baylis, M. R., 1 Munro Street, Whangarei. 0101
ZL1TKO Graves, C. E., 11 Casuarina Road, Bucklands Beach. 1704
ZL1TKP Gibson, J. W., c/- Post Office Counter, Edgecombe. 3082
ZL1TKQ Duncan, R. G., P.O. Box 11-040, Ellerslie, Auckland. 1013
ZL1TKR Foster, B. E., 30 Moresby Avenue, Waihi. 3061
ZL1TKS Duncan, A. K., 26 Ngao Road, Kelburn, Wellington. 6005
ZL1TKT Pearson, F. W., 22b James Street, Whakatane. 3080
ZL1TKU Hilliar, D. J., 13 Chipping Dale, Mangere Bridge, Auckland. 1701
- ZL1TKW** Bodman, K. I., 21 Bernard Street, Hamilton. 2001
ZL1TKX Weatherley, D. C., P.O. Box 3223, Onerahi, Whangarei. 0132
- ZL1TKY** Rickard, B. A., 38 Tui Street, Te Puke. 3071
ZL1TL Pickworth, R. A., Redcastle Road, R.D. 1D, Oamaru. 8921
ZL1TLA Koolen, J. F. L., 32 Kings Road, Panmure, Auckland. 1006
ZL1TLB Manning, J. C., 627 Beach Road, Rothesay Bay, Auckland. 1310
- ZL1TLC** May, A. P., 18 Longwood Place, Forrest Hill, Auckland. 1309
- ZL1TLD** Walker, W. D., P.O. Box 241, Otorohanga. 2564
ZL1TLF Cadness, R. H., 109 Glamorgan Drive, Torbay, Auckland. 1310
- ZL1TLH** Harris, L. I., 104 Captain Scott Road, Titirangi, Auckland. 1007
- ZL1TLI** Craig, N. A., 12 Orchard West Road, Ngatea. 2852
ZL1TLJ Rumble, G. O., 8 Moore Street, Ohakune. 5461
ZL1TLN Onrust, F., 37a Sylvia Road, St Heliers, Auckland. 1005
ZL1TLO Faulkner, R. E., c/- R Release, Kingseat Road, R.D. 4, Pukekohe. 1800
- ZL1TLP** Yerex, B. S., 24 High Street, Rotorua. 3201
ZL1TLQ McMillan, D. J., 4 Inaka Place, Matamata. 2271
ZL1TLR Walton, R. W., 100 Oregon Drive, Murupara. 3272
ZL1TLU Stevens, D., 23 Hillcrest Road, Orewa. 1461
ZL1TLV Oxner, E. A., 11 Warrington Street, Matua, Tauranga. 3001
ZL1TLW MacKenzie, S. D., 23 Roger Street, Rotorua. 3201
ZL1TLX Drake, M. J., 174 Point View Drive, R.D., Papatoetoe. 1730
ZL1TMA Appleyard, B. H., 13 Mole Street, Greytown. 5953
ZL1TMB McDonald, B. D., 7 Oriana Avenue, Mt Roskill, Auckland. 1004
- ZL1TMC** McDonald, T. S., 25 John Street, Pukekohe. 1800
ZL1TMD Pope, A. J. (Miss), George Crescent, Buckland, R.D. 2, Pukekohe. 1800
- ZL1TME** Schwarz, M. W., P.O. Box 32, Tirau. 2372
ZL1TMF McFadyen, D. G., 1 Hikurangi Terrace, Taumarunui. 2600
ZL1TMG Greenfield, R. S. T., 33 Tui Crescent, Maunu, P.O. Box 830, Whangarei. 0115
- ZL1TMH** Harvey, S. R. T., 7 Chester Crescent, Palmerston North. 5301
- ZL1TMI** Moseley, S. F. (Ms), P.O. Box 296, Waiuku. 1852
ZL1TMJ Lo, J. S., P.O. Box 76-481, Manurewa, Auckland. 1730
ZL1TMK Krause, R. E., 7 Gordon Street, Kawareau. 3083
ZL1TMM Brooker, A. S., 290 Park Avenue, Te Awamutu. 2400
ZL1TMN Holmes, G. E. (Mrs), c/- R.F. Holmes, R.D. 1, Waiuku, South Auckland. 1852
- ZL1TMO** Lawry, M. G., 22 Claremont Terrace, Otumoetai, Tauranga. 3001
- ZL1TMP** Pike, T. M., P.O. Box 299, Papakura, Auckland. 1730
ZL1TMQ McCarthy, J. W., P.O. Box 16-008, Hamilton. 2030
ZL1TMR Alderson, R. I., 50a Tiverton Road, Avondale, Auckland. 1007
- ZL1TMS** Watson, Diana, Eastbank Road, Thornton, R.D. 3, Whakatane. 3081
- ZL1TMV** Veldhuisen, Marc, P.O. Box 105-304, Auckland Central. 1030
- ZL1TMW** Shuker, M. L. (Mrs), 194 Kitchener Road, Pukekohe. 1800
ZL1TMZ Nice, K. S., 11 Janet Street, Pakuranga. 1706
ZL1TN Barron, K. H., 230 Riddell Road, Glendowie, Auckland. 1005
- ZL1TND** Probine, D. C., 6 Moreland Road, Mt Albert, Auckland. 1003
- ZL1TNE** Edwards, W. D., 26 Corrin Street, Hamilton. 2001
ZL1TNG Cron, B. E., 31 Kakanui Avenue, Hamilton. 2001
ZL1TNH Wilson, K. J., 43 Hinemoa Avenue, Taupo. 2730
ZL1TNI Harper, L. J., Postal Delivery Centre, Tangitoria. 0351
ZL1TNL Rodgers, P. A. (Mrs), 22 Golders Place, Taupo. 2730
ZL1TNN Hansen, G. W., 133a Paramount Parade, Tikipunga, Whangarei. 0101
- ZL1TNO** O'Loan, T. J., Kereru Road, R.D. 2, Ngauruahia. 2171
ZL1TNP Talbot, Alison, 64 Woodlands Crescent, Browns Bay, Auckland. 1310
- ZL1TNR** Bielby, F. L., 17 Old North Road, Orewa. 1461
ZL1TNT Maginness, D. N., 16 Ebony Street, Christchurch. 8005
ZL1TNX Chappell, P. J., 22 Rewa Street, Inglewood. 4651
ZL1TNY Quedley, F. J., 16 Woodhall Road, Epsom, Auckland. 1003
ZL1TNZ Cooper, S. J. S., 65a Patterson Avenue, Mission Bay, Auckland. 1005
- ZL1TO** Potter, J. W., 52/36 McLeod Road, Henderson, Auckland. 1008
- ZL1TOB** Crawford, J. V., 2/10 Park Avenue, Whangarei. 0101
ZL1TOC Colbert, O. C., 70 David Avenue, Manurewa. 1702
ZL1TOD McAuliffe, K., 18 Cook Street, Tauranga. 3001
ZL1TOE Pennell, A. E., Belk Road, R.D. 1, Tauranga. 3021
ZL1TOF Baker, G. S., 3/106 Celtic Crescent, Ellerslie, Auckland. 1005
- ZL1TOG** Taylor, L. R., 805 Riddell Road, St Heliers, Auckland. 1005
ZL1TOH Dale, B. H., 23 Mitchell Street, Tauranga. 3001
ZL1TOK Rowntree, Jan, c/- 12 Springside Place, New Lynn, Auckland. 1007
- ZL1TOL** Anderson, M. G., 42 Boakes Road, Mt Wellington, Auckland. 1006
- ZL1TOM** Ross, M. R., 183a Upland Road, P.O. Box 28-176, Remuera, Auckland. 1136
- ZL1TON** Mellars, L. R., 564 Beach Road, Rothesay Bay, Auckland. 1310
- ZL1TOP** Foster, M., Lone Kauri Road, Karekare, R.D., Piha, Auckland. 1250
- ZL1TOQ** Ashton, I. M., 7 Cunliffe Place, Glenfield, Auckland. 1310
ZL1TOR Adams, N. J., Matangi Road, R.D. 4, Hamilton. 2021
ZL1TOT Sim, P. T., Bycroft Road, R.D. 2, Drury. 1750
ZL1TOU Lowe, J., 51 Epsom Avenue, Epsom, Auckland. 1003
ZL1TOW Orr, W. B., 1c Rostrevor Avenue, Epsom, Auckland. 1003
ZL1TOX Stevenson, J. F. G., 20 Kirrie Avenue, Te Atatu South, Auckland. 1008
- ZL1TOY** McGilp, F. C., 6a Lilian Place, Pakuranga. 1706
ZL1TOZ Kennedy, R. M., R.D. 2, North Road, Papakura. 1730
ZL1TP Tauranga Branch NZART (Inc.), see Branch Directory
ZL1TPA Mourant, A. J. (Mrs), c/- 39 Churchill Road, Murays Bay, Auckland. 1310
- ZL1TPB** Brooks, R. K., 391 Ellerslie-Panmure Highway, Panmure, Auckland. 1006
- ZL1TPC** Clark, P., 177b Russell Road, Huntly. 1921
ZL1TPD Stephenson, P. A. (Ms), 105 Burnley Terrace, Mt Eden, Auckland. 1003
- ZL1TPE** McEwen, D. J., 11 Matipo Road, Te Atatu North, Auckland. 1008
- ZL1TPF** Humphrey, J. M. (Mrs), c/- 769 Cameron Road, Tauranga. 3001
- ZL1TPG** van Loon, Q. J. M., 30 Sturges Road, Henderson, Auckland. 1008
- ZL1TPH** Hayman, S. R., P.O. Box 186, Silverdale, North Auckland. 1462
- ZL1TPI** Smirk, A. T., 10 Masons Avenue, Herne Bay, Auckland. 1002
- ZL1TPJ** Walker, B. J. (Mrs), Crane Road, R.D. 1, Kamo. 0131
ZL1TPM Mead, P. G., 199a Don Buck Road, Massey, Auckland. 1008
- ZL1TPO** Vos, P. M., 33 Stapleford Crescent, Browns Bay, Auckland. 1310
- ZL1TPP** Locke, S. D., see ZL7TPP
ZL1TPR Ryan, P. L., Munro Road, Te Puna, R.D. 6, Tauranga. 3050
ZL1TPS Bryant, R. S., 44a Pleasant Road, Glen Eden, Auckland. 1007
- ZL1TPT** Reid, K. S., P.O. Box 474, Papakura. 1730
ZL1TPV Cameron, A. K., 24 Buick Crescent, Palmerston North. 5301
- ZL1TPW** Wild, P. T., 45 Central Avenue, Papatoetoe, Auckland. 1701
ZL1TPX Manning, B. F., 2 Argyll Road, Tauranga. 3001
ZL1TQ Elliott, K. G., 17 Red Bluff Rise, Campbells Bay, Auckland. 1310
- ZL1TQC** Tarlton, I. H., c/- Supply Sqn, RNZAF Base, Auckland. 1250
- ZL1TQF** Webster, E. T., Lake Road, Okaihau, Whangarei. 0455

ZL1TQH

ZL1TQH Saavedra, N., 34b Howard Hunter Avenue, St Johns, Auckland. 1006

ZL1TQI Reed, G. N., 1 Church Bay Road, Oneroa, Waiheke Island. 1240

ZL1TQL Seales, D. M. (Mrs), 42 Saffron Street, Birkdale, Auckland. 1310

ZL1TQM Joseph, D. H., 38 Sunnybrae Road, Glenfield, Auckland. 1310

ZL1TQN Woodward, N. F., Main Highway 33, R.D. 9, Te Puke. 3071

ZL1TQO Mawby, D. J., 4 Claremont Avenue, Chartwell, Hamilton. 2001

ZL1TQP Christensen, C. M. (Ms), 82 Donald Road, Kaitaia. 0500

ZL1TQQ Hobday, D. S., 12 Onedin Place, Titirangi, Auckland. 1007

ZL1TQR Kennedy, I. R., 36 Montclair Rise, Browns Bay, Auckland. 1310

ZL1TQT Reid, J. D., 15 Dunbar Place, Tokoroa. 2392

ZL1TQV McLeod, D. (Mrs), 81 Kayes Road, Pukekohe. 1800

ZL1TQX Bott, Jean, Woodstock Avenue, Mackaytown., P.O. Box 28, Karangahake, Paeroa. 2951

ZL1TQZ Rowe, I. S., 11 Eiger Place, Howick, Auckland. 1705

ZL1TR Rist, T. A., 22 Shortt Avenue, Mangere Bridge, Auckland. 1701

ZL1TRA Cox, R. O., 108b Beach Road, Papakura. 1703

ZL1TRC Hardwick, D. E., 66 Norrie Street, Melville, Hamilton. 2001

ZL1TRE Shepherd, M. B., 70a Long Drive, St Hellers, Auckland. 1005

ZL1TRF De Wit, R., 1 Pegasus Drive, Rotorua. 3201

ZL1TRG Welcome, P., 12 Batkin Road, Avondale, Auckland. 1007

ZL1TRH Walker, Ann, 51 Caronia Crescent, Mt Roskill, Auckland. 1004

ZL1TRL Huijich, A. P., 137 Totara Road, Whenuapai. 1250

ZL1TRM Bulte, L. W. (Mrs), Park Road, R.D. 3, Waiuku. 1852

ZL1TRP Dadds, D. J., P.O. Box 6, Mangonui. 0557

ZL1TRQ Hutton, L. D., 192 Grandview Road, Hamilton. 2001

ZL1TRR Morrow, I. E., Nikau Road, R.D. 2, Pokeno. 1872

ZL1TRS Shafe, T. P. G., 19 Scott Road, Stanmore Bay, Whangaparaoa. 1463

ZL1TRT Barnett, C. E. (Mrs), 48 Whihongi Street, Kaikohe. 0400

ZL1TRV Huijich, P. A., 137 Totara Road, Whenuapai. 1250

ZL1TRW Dydowicz, J. W., 206b Pilkington Road, Panmure, Auckland. 1006

ZL1TRX Wilson, J. P., 10 Brian Avenue, Milford, Auckland. 1309

ZL1TRY Keatinge, A. R., 8 Bernard Street, Matamata. 2271

ZL1TRZ Lawn, G. E., 74 Powells Road, Hamilton. 2001

ZL1TS Prentice, L. G., 5 Mountain View Road, Morningside, Auckland. 1003

ZL1TSC Clancy, P. J., 1/33 Church Crescent, Panmure, Auckland. 1006

ZL1TSD Dick, S. F., 9 Pringle Place, Hamilton. 2001

ZL1TSF Fish, A., 9 Seaview Terrace, Mt Albert, Auckland. 1003

ZL1TSG Gurr, S. W., 3 Brightside Road, Stanmore Bay, Whangaparaoa. 1463

ZL1TSH Ladyman, D. R., 4 Kennedy Street, Te Aroha. 2971

ZL1TSL Darvill, K. J., 38 Caen Road, Panmure, Auckland. 1006

ZL1TSM Garnett-Frizelle, H. H., 144b Nixon Street, Hamilton. 2001

ZL1TSN Hollis, M. A., 98 The Drive, Epsom, Auckland. 1003

ZL1TSO Soysa, S. W., P.O. Box 28-367, Remuera, Auckland. 1136

ZL1TSP Purvis, G.S., 2 Nelson Street, Papakura. 1703

ZL1TSQ Attrill, J. J., 7 Tawa Street, Mt Maunganui. 3002

ZL1TSS Armstrong, R. C. A., 142 King Street, Cambridge. 2351

ZL1TST Young, J. R., 14 Childs Avenue, Pukekohe. 1800

ZL1TSU Macaskill, S. L., 167 Waimumu Road, Massey, Auckland. 1008

ZL1TSV Talbot, I. C., 64 Woodlands Crescent, Browns Bay, Auckland. 1310

ZL1TSX Woodfield, S. A. (Miss), 72 Salamanca Road, Sunnynook, Auckland. 1310

ZL1TSY Law, J. A., 43 South Lynn Road, Titirangi, Auckland. 1007

ZL1TT Roberts, R. L., 39 Kay Drive, Blockhouse Bay, Auckland. 1007

ZL1TTA Fairweather, K. D., 33 Savoy Road, Glen Eden, Auckland. 1007

ZL1TTB Wevers, W. F., 122 Udy's Road, Pakuranga, Auckland. 1706

ZL1TTC Stevens, G. C., P.O. Box 778, Cambridge. 2351

ZL1TTD Carpenter, Rob, c/- J. Allison, Chapel Road, Loburn, R.D. 2, Rangiora. 8254

ZL1TTE Cooke, D. C., P.O. Box 44-132, Point Chevalier, Auckland. 1030

ZL1TTF Orsborn, P. R., 15 Spence Road, Henderson, Auckland. 1008

ZL1TTG Grimwood, T. A., 43 Ocean Road, Surfdale, Waiheke Island. 1240

ZL1TTH Burman, W. E., 13 Willowbrook Road, Pukekohe. 1800

ZL1TTI Hunter, R. A., 13 Datura Place, Sunnynook, Auckland. 1310

ZL1TTJ Winder, N. M. A. (Miss), 79 Brabant Street, Otupiki. 3092

ZL1TTK Nettleingham, J., Matahau Road, Katikati. 3063

ZL1TTL Bryan, M. D., 40 McCahill Views, Howick, Auckland. 1705

ZL1TTO Curran, W. J., 22 Claremont Avenue, Paeroa. 2951

ZL1TTQ Withers, L. R., Hinau Road, R.D. 1, Waimauku, Auckland. 1250

ZL1TTR Nicholson, O. C., 45 Tuatara Drive, Kamo, Whangarei. 0101

ZL1TTS Karrasch, David, 24 Brookes Road, Papakura. 1703

**ZL1TUB
ZL1TUC**

Borman, T. G., 3 Manuka Street, Hamilton. 2001

Cuthbert, E. W., 12 Kitenui Avenue, Mt Albert, Auckland. 1003

ZL1TUD Graham, D. W., 11 Galbraith Street, Rotorua. 3201

ZL1TUE Robinson, G. M., 39 Fitzherbert Avenue, West Harbour, Auckland. 1008

ZL1TUF Cook, B. W., 34 Sunset Road, Taupo. 2730

ZL1TUI Hannam, T. M., P.O. Box 186, Kawakawa. 0291

ZL1TUJ Marr, G. E., 11 Liley Place, Remuera, Auckland. 1005

ZL1TUK Aymes, N. C., Mountain View Road, Otorohanga. 2564

ZL1TUL Richardson, R. W., 53 Pohutukawa Drive, Hamilton. 2001

ZL1TUM Stewart, K. R., 5 Springfield Road, Rotorua. 3201

ZL1TUN Fendley, D. R., P.O. Box 271, Tauranga. 3015

ZL1TUQ Campkin, A. D., 11 Lyford Crescent, Forrest Hill, Auckland. 1310

ZL1TUR Turnwald, A. M. (Miss), P.O. Box 44-132, Point Chevalier, Auckland. 1030

ZL1TUS Watson, D. C., Eastbank Road, Thorndon, R.D. 3, Whakataane. 3081

ZL1TUT Walters, Dale, 4 Kiwi Place, Pukekohe, Auckland. 1800

ZL1TUU Parr, M. J., P.O. Box 68, Te Awamutu. 2400

ZL1TUV King, A. P., P.O. Box 225, Drury, Auckland. 1752

ZL1TUX Raffles, G. E. H., 34 Dundee Place, Blockhouse Bay, Auckland. 1007

ZL1TUY Young, R. A., 2 Margan Place, Papakura. 1703

ZL1TVA Dharmapriya, C., 4a Archibald Road, Kelston, Auckland. 1007

ZL1TVB Flutey, G. A., 43 Walters Road, Papakura, Auckland. 1703

ZL1TVC Werder, G. J., Tahuna Paeroa Road, Springdale, R.D., Waitoa. 4192

ZL1TVE Willis, D. R., Honey Street, Rawene. 0452

ZL1TVF Fitzpatrick, T. V., P.O. Box 25-155, St Heliers, Auckland. 1130

ZL1TVI Hitchens, J. T., 40 Glenlynn Avenue, Hamilton. 2001

ZL1TVJ Walsh, S. I. (Miss), Maungatapu, R.D. 1, Morrinsville. 2251

ZL1TVK Mahmoodi, S., 22 Cameron Street, Papakura, Auckland. 1703

ZL1TVL Harvey, A. L. (Mrs), Clark Road, R.D. 1, Ngaruawahia. 2171

ZL1TVM Eades, M. G., 20 Kelynn Road, Kelston, Auckland. 1007

ZL1TVN Fraser, L. B., P.O. Box 77 095, Mt Albert, Auckland. 1030

ZL1TVP Alkin, P. M., 88 Ross Street, Onerahi, Whangarei. 0101

ZL1TVQ Boyce, K. R., 33 Lambeth Road, Mt Roskill, Auckland. 1004

ZL1TVR Odell, A. L., 22 Howard Road, Northcote, Auckland. 1309

ZL1TVS Odell, A. E. (Mrs), 22 Howard Road, Northcote, Auckland. 1309

ZL1TVX Coburn, C. L., 105 Tihi Road, Rotorua. 3201

ZL1TVY Parr, Maree, 88 Red Hill Road, Papakura. 1703

ZL1TVZ Bartle, D. L., 1147 Scenic Drive North, R.D. 1, Titirangi, Auckland. 1021

ZL1TW Barnett, E. K., 141 Bethlehem Road, Tauranga. 3001

ZL1TWA Northcote, J. A., P.O. Box 11, Aria. 2551

ZL1TWD Sparkes, D. G., 17 Mamaku Street, Paraparaumu. 6450

ZL1TWE Norris, D. H., 14 Manning Street, P.O. Box 19-087, Hamilton. 2030

ZL1TWF Brown, C. J. I. (Mrs), 35 Lancaster Street, Hamilton. 2001

ZL1TWG Moseley, S. R., 3/599 Mt Albert Road, Royal Oak, Auckland. 1003

ZL1TWH Zein, D. B., 10/8 Inkerman Street, Royal Oak, Auckland. 1003

ZL1TWI Lydiate, K., 52 Fitzwater Place, Henderson, Auckland. 1008

ZL1TWK Bang, T. J., 58 Monarch Avenue, Hillcrest, Auckland. 1310

ZL1TWM Rhodes, R. W., 45 Rangeview Road, Sunnysvale, Waitakere City. 1008

ZL1TWP Stoney, D. B., Alpine Road, R.D. 4, Warkworth. 1241

ZL1TWQ Hall, M. J., P.O. Box 1460, Whangarei. 0115

ZL1TWR Palmer, S. D., 22 Seaway Road, Clarkes Beach, R.D. 4, Pukekohe. 1850

ZL1TWT Marsden, L. M. (Ms), 79 Donald Road, Kaitaia. 0500

ZL1TWU Pullar, G. R., 11 Wainone Place, Warkworth. 1241

ZL1TWV Cleave, V. J., 75 Taunton Terrace, Blockhouse Bay, Auckland. 1007

ZL1TWW Cumberlege, A. C., 26 Knightsbridge Drive, Forrest Hill, Auckland. 1309

ZL1TWX McFadzean, P. A., 4 Winspear Place, Papatoetoe. 1701

ZL1TWZ Russell, G. C., 21 Highland Avenue, Titirangi, Auckland. 1007

ZL1TX Kan, K. Y., 1/43 Epsom Avenue, Epsom, Auckland. 1003

ZL1TXC Perston, J. M. (Mrs), 49 Massey Street, Kawerau. 3083

ZL1TXE Geary, A. S. D., 140 Hinewa Road, Tauranga. 3001

ZL1TXH Schultz, W. (Mrs), Schultz Road, R.D. 2, Waipu. 0254

ZL1TXI Culloty-Marsh, D. L. (Mrs), 5 May Street, Hillcrest, Hamilton. 2001

ZL1TXK Burdon, R. W., 7 Elzy Street, Blenheim. 7301

ZL1TXL Heywood, E. J., P.O. Box 38-471, Howick. 1730

ZL1TXM Dexter, J. D. G., 43 Owens Road, Epsom, Auckland. 1003

ZL1TXN Vickery, W. L., 3/19 Heapy Street, Blockhouse Bay, Auckland. 1007

ZL1TXO Dawson, R. N., 3 Willowbrook, Pukekohe. 1800

ZL1TXP Schultz, P. O., Schultz Road, R.D. 2, Waipu. 0254

ZL1TXQ Rowe, Alison, 100 Totara Close, Thames. 2801

- ZL1TXS** Nield, I. J., 6 Merchant Avenue, Te Atatu South, Auckland. 1008
- ZL1TXU** Cook, D. G., 18 Coventry Road, Hamilton. 2001
- ZL1TXX** Kelly, D. B., 17 Ashurst Avenue, Hamilton. 2001
- ZL1TXZ** Boot, I. O. G., 3b Hunterville Court, Ellerslie, Auckland. 1005
- ZL1TY** Monk, W. K. G., 23 Matipo Avenue, Rotorua. 3201
- ZL1TYA** Bretherton, Margaret, 24 Iles Road, Lynmore, Rotorua. 3201
- ZL1TYB** Atkinson, G. F., 10 Kohe Kohe Street, Kelston, Auckland. 1007
- ZL1TYC** Fitzpatrick, D. J., 293 River Road, Kawerau. 3083
- ZL1TYD** Hill, A. C., 3a Glen Norman Avenue, Henderson, Auckland. 1008
- ZL1TYE** Brien, G. J., c/- 20 Korma Road, Royal Oak, Auckland. 1006
- ZL1TYF** Towler, T. J., 5 Countess Close, Maupuia, Wellington. 6003
- ZL1TYG** Eisenring, R. A. (Mrs), P.O. Box 1283, Whangarei. 0115
- ZL1TYH** Burrell, C. J., 78 Lewis Street, Hamilton. 2001
- ZL1TYI** Bridger, G. D., 12 Glendowie Road, Glendowie, Auckland. 1005
- ZL1TYJ** Ball, R. J., R.D. 1, Turangi. 2751
- ZL1TYL** Taylor, P. J., 14 Gollan Road, Mt Wellington, Auckland. 1006
- ZL1TYN** Dunlop, B. V., Unit 1, 239 Robertson Road, Mangere, Manukau City. 1701
- ZL1TYO** Fletcher, S. J., 32 Garden Heights Avenue, Glenview, Hamilton. 2001
- ZL1TYP** Thompson, G. O., 2/23 Bulteel Street, New Plymouth. 4601
- ZL1TYQ** Sadler, J., 35 Patterson Street, Mt Maunganui. 3002
- ZL1TYR** Carter, Robin D., 40 Montgomery Crescent, Hamilton. 2001
- ZL1TYS** Anderton, J. R. T., 225a Beach Road, Papamoa. 3003
- ZL1TYT** Lowe, E. R., R.D. 8, Hamilton. 2021
- ZL1TYV** Jenkins, M. W., 35 Robertson Street, Rotorua. 3201
- ZL1TYW** Middlemiss, G. D., Eureka Station Road, R.D. 4, Hamilton. 2021
- ZL1TYZ** Jenner, A. M., 43 Wairiki Road, Mt Eden, Auckland. 1003
- ZL1TZ** Stewart, G. W., 31 Levers Road, Tauranga. 3001
- ZL1TZA** Jenner, R. P., R.D. 1, Kaitikati. 3063
- ZL1TZB** Nicoll, G. H., 161 Newcastle Road, Hamilton. 2001
- ZL1TZE** Davison, J. G., 19 Thompson Terrace, Manurewa. 1702
- ZL1TZF** Binns, N. L., 10 Denby Crescent, Tikipunga, Whangarei. 0101
- ZL1TZG** McKevitt, M. J., 12 Apanui Avenue, Whakatane. 3080
- ZL1TZI** Donaldson, G. D., 80 Woolfield Road, Papatoetoe, Auckland. 1701
- ZL1TZL** Rowe, G. J., 4 Allendale Road, Mt Albert, Auckland. 1003
- ZL1TZM** Mott, P. W., P.O. Box 36-502, Northcote, Auckland. 1330
- ZL1TZP** Doell, S. D., 11 Sandspit Road, Waiuku. 1852
- ZL1TZQ** Morgan, K. C., 12/19 Verbena Road, Birkdale, Auckland, P.O. Box 33-1475, Takapuna. 1332
- ZL1TZS** Reeves, G. F., 329 East Coast Road, Mairangi Bay, Auckland. 1310
- ZL1TZU** Miller, R. T., Te Wapahu Road, R.D. 1, Russell. 0255
- ZL1TZV** Stockley, L. A. F., c/- 19 Fernglen Road, St Heliers, Auckland. 1005
- ZL1TZW** Shaw, Jackie, c/- Post Office, Paerata. 1800
- ZL1TZX** Fryer, B. S., 38 Monarch Avenue, Glenfield, Auckland. 1310
- ZL1TZY** Noble, P. V., 22 Clagery Street, Sandringham, Auckland. 1003
- ZL1TZZ** Skinner, D. E., 75 Lynbrooke Avenue, New Lynn, Auckland. 1007
- ZL1UA** Harvey, J. K., 93 8th Avenue, Tauranga. 3001
- ZL1UAA** Head, S. A. (Miss), 13 Simkin Street, Taupo. 2730
- ZL1UAB** Petrie, G. W., 64 Sunnyhills Avenue, Glenview, Hamilton. 2001
- ZL1UAC** Sangster, I. W., 75 Anawhata Road, Piha, R.D., Auckland. 1250
- ZL1UAD** Blackwell, D. M., P.O. Box 42-130, Orakei, Auckland. 1130
- ZL1UAE** Alderson, S. E., 1 Brough Place, Hamilton. 2001
- ZL1UAF** Verzyde, P., 8 Mary Dreaver Street, Avondale, Auckland. 1007
- ZL1UAH** Dodds, M. L. E. (Mrs), P.O. Box 6, Manganui. 0557
- ZL1UAI** Cayton, M. L. (Ms), P.O. Box 128, Edgecumbe. 3082
- ZL1UAJ** Jillings, A. L., 22 Mountain Road, Rotorua. 3201
- ZL1UAK** Akelia, V. R. H., P.O. Box 27-108, Mt Roskill, Auckland. 1030
- ZL1UAL** Seales, P. J. M. (Mrs), Postal Counter, Broadwood, Northland. 0571
- ZL1UAM** Crook, S. A. (Mrs), 3 Icarua Place, Rotorua. 3201
- ZL1UAN** Ah-Chan, W. R., 61 Devon Street, Rotorua. 3201
- ZL1UAO** Murray, A. J. (Ms), 22 Western Springs Road, Mt Albert, Auckland. 1003
- ZL1UAP** Johnson, G. C., 49a Butley Drive, Pakuranga. 1706
- ZL1UAQ** Carter, S. B., c/- Tasman Post Office, Nelson. 7150
- ZL1UAS** Scott, A., 25a Rodney Road, Howick. 1705
- ZL1UAT** Sowman, M. D., 11 Waipoua Street, Mangakino. 2391
- ZL1UAW** Jansen, R. M., 1/4 Warwick Avenue, Papatoetoe, Auckland. 1701
- ZL1UAX** Seales, D., 42 Saffron Street, Birkdale, Auckland. 1310
- ZL1UAY** Brunner, J., c/- P.A. Lundim, 13 Huia Street, Oneroa, Waiheke Island. 1240
- ZL1UAZ** Rowe, R. J., P.O. Box 35-639, Browns Bay, Auckland. 1330
- ZL1UB** Wilson, D. A., 1/35 Rangitoto Terrace, Milford, Auckland. 1309
- ZL1UBA** Anderson, R. J. (Dr), 704 Mt Eden Road, Mt Eden, Auckland. 1004
- ZL1UBB** Gardiner, R. S. A., 5 Lingham Crescent, Torbay, Auckland. 1310
- ZL1UBE** Edwards, J. D., 147a Waipuna Road, Mt Wellington, Auckland. 1006
- ZL1UBG** Millar, R. C., 82 Mount View Drive, Rotorua. 3201
- ZL1UBH** Miller, R. N., Grattan Road, Te Aroha. 2971
- ZL1UBJ** Findlay, D. K., 274 Panama Road, Mt Wellington, Auckland. 1006
- ZL1UBK** Brown, G. A., 16a Ocean Road, Ohope. 3085
- ZL1UBL** Falloon, G. A., P.O. Box 82-113, Highland Park, Auckland. 1730
- ZL1UBM** Willis, B. E., 195 Taharepa Road, Taupo. 2730
- ZL1UBN** Warren, O. W., 72 Riverpark Crescent, Henderson, Auckland. 1008
- ZL1UBP** Meikle, B. P., 13 Captain Scott Road, Glen Eden, Auckland. 1007
- ZL1UBQ** Crossett, T. A., 18 Raihara Street, Kaikohe. 0400
- ZL1UBR** Rhodes, B. A., 39 Anglesea Street, Hamilton. 2001
- ZL1UBS** Watchman, S. J., c/- Nelson Hospital, Private Bag, Nelson. 7020
- ZL1UBT** Sanne, G. T., 23 18th Avenue, Tauranga. 3001
- ZL1UBU** McCutcheon, G. L., 63 Totara Road, Te Atatu North, Auckland. 1008
- ZL1UBV** Withers, P. G., 187 Morningside Road, Whangarei. 0101
- ZL1UBW** Libeau, F. L., 10 Aubrey Crescent, Campbells Bay, Auckland. 1310
- ZL1UBY** Murphy, S. B., 2/1096 Whangaparaoa Road, Tindalls Beach, Whangaparaoa. 1463
- ZL1UBZ** Holt, E. D. (Mrs), 10 Collingwood Road, Waiuku. 1852
- ZL1UC** Gilbert, C. J., 6 Montmere Avenue, Te Atatu North, Auckland. 1008
- ZL1UCC** Biesebroek, J., P.O. Box 121, Orewa. 1461
- ZL1UCE** Warner, P. J., 36 Harvey Street, Taupo. 2730
- ZL1UCF** Price, C., Brockburn Farm House, R.D. 1, Kaitia. 0500
- ZL1UCI** Pahl, E. W. T., 17 Landscape Road, Tauranga. 3001
- ZL1UCJ** Teviotdale, E. A., P.O. Box 7051, Rotorua. 3230
- ZL1UCM** Parr, R., 3 Orelis Street, Hamilton. 2001
- ZL1UCN** Bell, W. M. (Mrs), 62b Eden Terrace, Kamo, Whangarei. 0101
- ZL1UCP** Short, N. J., 43-Taupo View Road, Taupo. 2730
- ZL1UCR** Jopling, Bill, 7 Lancaster Road, Birkdale, Auckland. 1310
- ZL1UCX** Smith, K. L., 16 Hewlett Road, Massey, Auckland. 1008
- ZL1UCZ** Tooke, B. H., Main Road, R.D., Walton. 2273
- ZL1UDA** Davis, Dennis, 6 Brooke Terrace, Cambridge. 2351
- ZL1UDB** Bryce, B. W., 524 Thames Coast Road, R.D. 5, Te Puru, Thames. 2821
- ZL1UDC** Grundy, R. W., 18 Waiau Street, Torbay, Auckland. 1310
- ZL1UDD** Mitchell, Kevin, 3 Millen Place, Clarks Beach. 1850
- ZL1UDE** Morey, E. R., 35 Elmwood Crescent, Hamilton. 2001
- ZL1UDF** Streiff, D. R., 18 Anzac Avenue, Morrinsville. 2251
- ZL1UDG** Wells, G. G., 2nd Avenue, P.O. Box 36, Waihou. 2972
- ZL1UDJ** Duffell, A. H., 16 Hyde Avenue, Dinsdale, Hamilton. 2001
- ZL1UDK** Marsh, L. A., Dardy Road, Arapuni, R.D. 1, Putaruru. 2370
- ZL1UDM** Stannard, E. A., Ngatira Road, Lichfield, R.D. 2., Putaruru. 2371
- ZL1UDN** Rowe, S. W., 57 Valentine Street, Papakura. 1703
- ZL1UDP** McKain, M. (Mrs), Summerfields Lane, R.D. 3, Hamilton. 2021
- ZL1UDQ** Rawlings, G. K., 10a Seymour Road, Henderson, Auckland. 1008
- ZL1UDR** McDonnell, T. R., 10 Faith Bullock Place, New Lynn, Auckland. 1007
- ZL1UDT** McCorral-Smythe, E. G., 191 Wade River Road, Whangaparaoa. 1463
- ZL1UDV** Frogley, C. D., 22 Mellons Bay Road, Howick, Auckland. 1705
- ZL1UDY** McGregor, G. R., 20 Drome View Place, Beachhaven, Auckland. 1310
- ZL1UDZ** Greenman, P. M. (Mrs), c/- 4 Kentucky Street, Ellerslie, Auckland. 1005
- ZL1UE** Williams, M. K., Jury Road, R.D. 10, Hamilton. 2021
- ZL1UEA** Woods, D. I., 23 Omokoroa Road, Omokoroa, Tauranga. 3050
- ZL1UEB** Berry, E. B., Scotsmans Valley Road, R.D. 1, Morrinsville. 2251
- ZL1UEC** Hynds, K. E., 29a Adams Lane, Springlands, Blenheim. 7301
- ZL1UED** Smith, G. B., 8 Sispara Place, Beachhaven, Auckland. 1310
- ZL1UEF** Porter, J. W., 37 Torkar Road, Clarks Beach, R.D. 4, Pukekohe. 1850
- ZL1UEG** Lee, J. A., P.O. Box 4379, Mt Maunganui. 3030
- ZL1UEI** Pritchard, R. E., 2 Rifleman Rise, "Unsworth Heights", Glenfield, Auckland. 1310
- ZL1UEJ** Maindonald, P. G., 14 Te Ana Place, Linmore, Rotorua. 3201
- ZL1UEK** Morecraft, I. G., 8 Valley Road, Pukekohe. 1800

ZL1UEL

ZL1UEL Hohua, T., 69 Hindmarsh Street, Henderson, Auckland. 1008

ZL1UEM Kilfoyle, H. T., 44 Rawhitiroa Road, Kohimarama, Auckland. 1005

ZL1UEN Peters, J. W., 69 Lytton Street, Rotorua. 3201

ZL1UEP Lewers, D. R., 125 Manuka Road, Glenfield, Auckland. 1310

ZL1UER Taylor, G. M. (Mrs), 805 Riddell Road, St Heliers, Auckland. 1005

ZL1UES Roysds, P. I., 10 Marsh Street, Tauranga. 3001

ZL1UET Seymour, Dennis, P.O. Box 23-474, Papatoetoe, Auckland. 1730

ZL1UEU Taylor, M. L., 805 Riddell Road, St Heliers, Auckland. 1005

ZL1UEX Cooke, J. B. (Mrs), P.O. Box 44-132, Point Chevalier, Auckland. 1030

ZL1UEY Voigt, R. E., 1st Floor, 304 Main Road, Orewa. 1461

ZL1UF Fortune, D. L., 39 Juliet Avenue, P.O. Box 82-272, Highland Park, Auckland. 1730

ZL1UFB McDonald, A., Bulltown Road, Waihi. 3061

ZL1UFC Warburton, J. J., 2 Pine Avenue, Tauranga. 3001

ZL1UFD Ward, B. J., 2 Prangley Avenue, Mangere, Auckland. 1701

ZL1UFE White, D. E. G., 34 Haseler Crescent, Howick, Auckland. 1705

ZL1UFF Bennett, R. H., 120b Lynwood Road, New Lynn, Auckland. 1007

ZL1UFK Biggar, D. R., 6 Pickwick Parade, Howick, Auckland. 1705

ZL1UFL Allen, G. D., 19 Robley Crescent, Glendowie, Auckland. 1005

ZL1UFN Gallaugher, I. R., Potts Road, R.D. 1, Howick. 1730

ZL1UFO Arnet, D. A., 32 Lyttleton Avenue, Forrest Hill, Auckland. 1310

ZL1UFP Rumble, Owen W., 5 Apollo Place, Rotorua. 3201

ZL1UFQ Nilsson, R. E., 52a Alison Street, Hamilton. 2001

ZL1UFU Frost, D. A., 3 Cameron Street, Papakura. 1703

ZL1UFV Gilbert, M. S., c/- 2 Leslie Street, Taupo. 2730

ZL1UFW Nicholls, G. R. B., 7 Eastern Beach Road, Bucklands Beach. 1704

ZL1UFY James, T. C., P.O. Box 100-028, North Shore Mail Centre, Auckland. 1330

ZL1UFZ Tavinor, P. M., 91a Smeaton Drive, Whangarei. 0101

ZL1UG Redgrave, C. I., 48 Covil Avenue, Te Atatu South, Auckland. 1008

ZL1UGA Mulder, R. G., 44 Marvon Downs Avenue, Pakuranga, Auckland. 1706

ZL1UGB Clark, S. P., 1/1 Titivai Place, Birkenhead, Auckland. 1310

ZL1UGC Sturgess, J. G., c/- 18 Meadowlands Drive, Howick, Auckland. 1705

ZL1UGD Parr, A. J., P.O. Box 68, Te Awamutu. 2400

ZL1UGE Benner, M. T., 18 Andes Avenue, Mangere Bridge, Auckland. 1701

ZL1UGG Hewer, P. K., 16 Adel Place, Weymouth. 1702

ZL1UGN Walsh, R. H. N., 84 Paraonui Road, Tokoroa. 2392

ZL1UGK Baumgartner, A. E. (Ms), P.O. Box 53, Whangaparaoa, Hibiscus Coast. 1463

ZL1UGM Mowry, A. K., 25 Hinau Street, Hamilton. 2001

ZL1UGN Brown, E. L., 42 Songer Street, Nelson. 7001

ZL1UGO Bishell, A. J., P.O. Box 424, Whangarei. 0115

ZL1UGP Hadfield, P. G., 92 Fisher Parade, Pakuranga, Auckland. 1706

ZL1UGR Russell, G. M., 48/2 Millhouse Drive, Howick, Auckland. 1705

ZL1UGT Gulliver, K. E., 43a Te Ahuahu Road, R.D. 2, Piha. 1250

ZL1UGX Armstrong, K. J., 12 Churchill Street, Pukekohe. 1800

ZL1UGY Kitching, L. J., 3 Hamill Road, East Tamaki, Auckland. 1701

ZL1UGZ Hannah, R. T., 275 Don Buck Road, Massey, Auckland. 1008

ZL1UHA O'Neill, G., 817 Mt Eden Road, Mt Eden, Auckland. 1004

ZL1UHB Mulholland, J. B., 1/10 Domain Drive, Parnell, Auckland. 1001

ZL1UHL Ritchie, Neil, P.O. Box 532, Papakura, Auckland. 1730

ZL1UHL Buchan, D. R., 29 Price Crescent, Mt Wellington, Auckland. 1006

ZL1UHM Ellmers, L. A., 8 Alamein Avenue, Onerahi, Whangarei. 0101

ZL1UHN Jacobson, I. R. B. (Dr), 10c Holgate Road, Kohimarama, Auckland. 1005

ZL1UHQ Smith, D. J., 156 Rangitoto Road, Papatoetoe. 1701

ZL1UHR Wendelborn, L. N., 46 Danbury Drive, Torbay, Auckland. 1310

ZL1UHS Windram, M. R., 30 Pluto Place, Birkenhead, Auckland. 1310

ZL1UHT Griffin, M. E., 12 Valley Road, Pukekohe. 1800

ZL1UHU Davey, A. J., 5 Capricorn Place, Browns Bay, Auckland. 1310

ZL1UHX Brammer, P. A., 63b College Road, Northcote, Auckland. 1309

ZL1UHZ Sutton, L. M. (Mrs), 207 Fergusson Drive, Thames. 2801

ZL1UI Cardno, I. M., 5b Keldale Place, Forrest Hill, Auckland. 1309

ZL1UIB Sykes, Nicola, 12 Lisbon Street, Tauranga. 3001

ZL1UIC Gilbert, A. J., 25 King Street, Cambridge. 2351

ZL1UID Gordon, S. L., 34 Pallant Street, Manurewa. 1702

ZL1UIE Bach, M. E., 100 Sturges Road, Henderson, Auckland. 1008

ZL1UIM Campbell, R. S., 28 Gilbert Road, Otara, Auckland. 1701

ZL1UIN Hitchins, A. L., 40 Glen Lynne Avenue, Hamilton. 2001

ZL1UIO Frew, D. J., 25 Campbell Road, Mt Maunganui. 3002

ZL1UIP Glass, G. W., Gun Club Road, R.D. 1, Pukekohe. 1800

ZL1UIR Wilson, G. J., 21 Betley Crescent, Hamilton. 2001

ZL1UIT Parkinson, R. I., 488 Mahoe Street, Te Awamutu. 2400

ZL1UIV Jenkins, S. E. M. (Mrs), 35 Robertson Street, Rotorua. 3201

ZL1UIW Ham, J., 58b Ferguson Street, Tokoroa. 2392

ZL1UIW Kearns, B. T., c/- Tautoko Radio, Mangamuka Bridge, Mangamuka. 0455

ZL1UIY Stevenson, R. A., 761 East Coast Road, Browns Bay, Auckland. 1310

ZL1UIZ Barnett, N. R. (Miss), 152 Eden Street, Te Awamutu. 2400

ZL1UJ Jenner, K. W., 24 Quail Drive, R.D. 4, Albany. 1331

ZL1UJA Morrissey, M. A., 19 Chadlington Street, Parklands, Christchurch. 8009

ZL1UJB Beale, J., 12 Emerson Street, Te Aroha. 2971

ZL1UJC Corrigan, T. L. (Mrs), P.O. Box 40-135, Glenfield, Auckland. 1330

ZL1UJG Murphy, K. L. G., 8 Tamar Place, Nawton, Hamilton. 2001

ZL1UJK Griffin, W. P., c/- P.O. Box 28-300, Remuera, Auckland. 1136

ZL1UJM Lovett, K. J., P.O. Box 588, Manurewa, Auckland. 1730

ZL1UJO Cranna, A. W., 19 Kingsley Street, Grey Lynn, Auckland. 1002

ZL1UJP Cobb, R. P., 8 Beaubank Road, Kelston, Auckland. 1007

ZL1UJQ Meredith, R. W., c/- P.O. Box 6059, Brookfield, Tauranga. 3030

ZL1UJR Jarvis, I. H., P.O. Box 7, Te Aroha. 2971

ZL1UJS Ferguson, K. D., 3 Grove Lane, Pakuranga, Auckland. 1706

ZL1UJU Runciman, S. R., 1/16 Parramatta Place, Howick, Auckland. 1705

ZL1UJV Hayes, L. T., 161 Whangaparaoa Road, Orewa. 1461

ZL1UJW Haigh, C. B. (Mrs), 12 Kauri Road, Oratia, Auckland. 1007

ZL1UJY Hall, A. N., 26 Seymour Street, Christchurch. 8004

ZL1UJZ McCarthy, J. A., 309 Mt Eden Road, Mt Eden, Auckland. 1003

ZL1UK Beech, S. C., 53 Pupuke Road, Northcote, Auckland. 1309

ZL1UKA Guillontia, M., 40 McKay Drive, Temple View, Hamilton. 2001

ZL1UKB Hayes, G. M., 161 Whangaparaoa Road, Orewa. 1461

ZL1UKC Nicholson, R. J., 13 Fenriss Street, Rotorua. 3201

ZL1UKD Woodfield, Steve, 19 a Ayton Drive, Glenfield, Auckland. 1310

ZL1UKE Halliwell, P. W., 77a Target Road, Glenfield, Auckland. 1310

ZL1UKG Loveridge, P. W., 8 Mostyn Street, Kingsland, Auckland. 1003

ZL1UKI Ujdur, R., P.O. Box 189, Awanui. 0552

ZL1UKJ Morley, K. H. G., 258 Sunset Road, Mairangi Bay, Auckland. 1310

ZL1UKL McLean, A. K., 25 Barberton Terrace, Red Hill, Papakura. 1703

ZL1UKN Massey, B. G., 4 Bournemouth Avenue, St Lukes, Auckland. 1003

ZL1UKO Ngakuru, D., P.O. Box 278, Kaikohe. 0400

ZL1UKP McCafferty, W. M., 23 Dudding Avenue, Northcote, Auckland. 1309

ZL1UKT Dancy, N. K., 35 McMillan Place, Howick. 1705

ZL1UKU Ashton, N. J., 7 Cunliffe Place, Glenfield, Auckland. 1310

ZL1UKW Donnan, M. J. R., c/- New Zealand Post, Mangonui. 0557

ZL1UKX Leef, R., 69 Park Avenue, Whangarei. 0101

ZL1UKY Wastney, R. B. C., 13 Forsythe Place, Massey, Auckland. 1008

ZL1UKZ Neale, H. F. T., 41 Hope Farm Avenue, Pakuranga. 1706

ZL1UL Gilmore, G. H., Gilmore Road, R.D. 10, Tuhikarama, Hamilton. 2021

ZL1ULA Powell, U. L. (Mrs), R.D. 4, Tahuna Road, Ohinewai. 2191

ZL1ULB Salt, G. G. R., 71 Moncur Drive, Rotorua. 3201

ZL1ULC Armstrong, D. J., 27 Black Road, R.D. 9, Te Puke. 3071

ZL1ULD Faithfull, B. B., 43 Roseberry Avenue, Birkenhead, Auckland. 1310

ZL1ULF Morris, Dave, 3 Elstree Avenue, Glen Innes, Auckland. 1006

ZL1ULG Winsor, M. A., 2/6 Northboro Road, Takapuna, Auckland. 1309

ZL1ULH Wadham, P. L. (Mrs), 889 Whangaparaoa Road, Little Manly, Whangaparaoa. 1463

ZL1ULI Littlewood, B. R., 34 Mason Avenue, Pukekohe. 1800

ZL1ULK Griffin, Durlene, 12 Valley Road, Pukekohe. 1800

ZL1ULM McDonald, L., 25 John Street, Pukekohe. 1800

ZL1ULN Goode, D. B., 40 Riverpark Crescent, Henderson, Auckland. 1008

ZL1ULO Sheat, D., c/- P.O. Box 5104, Wellesley Street, Auckland. 1036

ZL1ULR Shefford, D. W., 15 Bacot Place, Howick. 1705

ZL1ULS Duncan, R., 173 Taharepa Road, Taupo. 2730

ZL1ULT Olliff, G. M., 5 Corlinda Place, Takanini, P.O. Box 51-557, Auckland. 1730

ZL1ULV Turnwald, M. J., 29 Cliff View Drive, Green Bay, Auckland. 1007

ZL1ULW Barnett, R. W., 3/32 Mill Road, Whangarei. 0101

- ZL1ULX** Rasmussen, K. S., 54 Banbury Crescent, Hamilton. 2001
ZL1ULY Whittaker, C. W., 4 Oak Place, Whakatane. 3080
ZL1ULZ Bradman, R. J., 58 Fancourt Street, Meadowbank, Auckland. 1005
- ZL1UMA** Wilton, L. A., Parr Road, R.D. 10, Palmerston North. 5321
ZL1UMB Manning, G. S., P.O. Box 80-146, Green Bay, Auckland. 1230
- ZL1UMC** Twentymann, I. R., 1/68 Haseler Crescent, Howick. 1705
ZL1UMD Pope, Kevin, George Crescent, Buckland, R.D. 2, Pukekohe. 1800
- ZL1UMH** Milnes, Fred, P.O. Box 205, Tokoroa. 2392
ZL1UMJ Allen, E. L., 452 Pt Chevalier Road, Point Chevalier, Auckland. 1002
- ZL1UMK** Winefield, C. S., 7 Kaka Crescent, Tokoroa. 2392
ZL1UML Harland, W. R., 8 Romilly Court, Papakura. 1703
ZL1UMM Selby, C. D., Onerahi, R.D. 1, Whangarei. 0121
ZL1UMN Barnett, E. W., 152 Eden Avenue, Te Awamutu. 2400
ZL1UMO Hemsworth, K., 6 Freyberg Place, Howick. 1705
ZL1UMP Edge, W. B., P.O. Box 125, Kaihoko. 0400
ZL1UMR Miles, R. L., Old Tauranga Road, R.D. 2, Waihi. 3061
ZL1UMT Smith, G. F., 8 Arapuni Avenue, Onehunga, Auckland. 1006
ZL1UMV MacKay, T. D., 64 Gate Pa Avenue, RNZAF Base Ohakea, Palmerston North. 5452
- ZL1UMW** Graham, L. R., 1/4 Newhaven Street, Ellerslie, Auckland. 1005
- ZL1UMX** Van Veen, E. F., 21 Taonui Street, Papakura, Auckland. 1703
- ZL1UN** Aidzanovic, M., P.O. Box 83-131, Edmonton, Auckland. 1230
- ZL1UNA** Eringa, J. B. H., P.O. Box 67, Westpark Village, Auckland. 1250
- ZL1UNB** Gatland, E. C., P.O. Box 314, Mangonui. 0557
ZL1UNC Morgan, H. J., 3 Sonia Avenue, Remuera, Auckland. 1005
ZL1UNE Eyre, W. B. M. (Mrs), 5 Tennyson Street, Whangarei. 0101
ZL1UNG Bowdler, R. M., 97 Atkinson Road, Titirangi, Auckland. 1007
- ZL1UNH** Lawrence, A. J., 34 Brentwood Avenue, Mt Eden, Auckland. 1003
- ZL1UNI** Smith, Steve, Coultouns Road, R.D. 2, Pukekohe. 1800
ZL1UNJ Swales, J. R., 22 Summerist Drive, Northpark, Howick. 1705
- ZL1UNL** Dent, P. W., P.O. Box 7033, Tikipunga, Whangarei. 0133
ZL1UNM Mantell, W. R., P.O. Box 7160, Te Ngae, Rotorua. 3230
ZL1UNN Shaw, A. J., P.O. Box 11-045, Papamoa. 3030
ZL1UNO Stone, Edward T. G., 45 Longburn Road, Henderson, Auckland. 1008
- ZL1UNP** Burgess, M. J., 102 Hine Street, New Plymouth. 4601
ZL1UNS Bell, K., 7 June Place, Torbay, Auckland. 1310
ZL1UNT Matthews, J. H., 33 Manapouri Street, Whangarei. 0101
ZL1UNU Kearney, C. R., 31 Dagenham Street, Manurewa. 1702
ZL1UNW Driver, M. J., Puerua, R.D. 1, Kerikeri. 0470
ZL1UNX Horn, D. G., R.D. 3, Taupiti Road, Te Aroha. 2971
ZL1UNZ Eyre, L. H., 5 Tennyson Street, Whangarei. 0101
ZL1UO Girbin, R. A., 19 Hinemoa Place, Snells Beach, Warkworth. 1240
- ZL1UOC** Cotton, S. A., P.O. Box 59-078, Mangere Bridge, Auckland. 1730
- ZL1UOH** Ewen, D. T., 113 Braigh Road, Waipu. 0254
ZL1UOI Williamson, J. A., 46 Moncur Drive, Rotorua. 3201
ZL1UOJ Kilgour, D. A., 21 Kilimanjaro Drive, Howick, Auckland. 1705
- ZL1UOK** Oldenburg, B., 46a Mains Avenue, Whangarei. 0101
ZL1UOM Jane, M. I., 27 King Street, Waiuku. 1852
ZL1UOO Bain, A. M., 58 George Crescent, Buckland, R.D. 2, Pukekohe. 1800
- ZL1UOP** Schultz, T. F., Schultz Road, R.D. 2, Waipu. 0254
ZL1UOR Evans-McLeod, B. E., 21 Laurence Street, Gate Pa, Tauranga. 3001
- ZL1UOS** Davy, K. J. P., P.O. Box 928, Rotorua. 3215
ZL1UOT Davy, C. J. (Mrs), P.O. Box 928, Rotorua. 3215
ZL1UOU Tottenham, R. D., 13a Andrew Road, Howick, Auckland. 1705
- ZL1UOV** Baine, E. J. (Mrs), P.O. Box 1, Broadwood. 0571
ZL1UOW Wells, E. L., P.O. Box 135, Matata. 3084
ZL1UOZ Clotworthy, A. W., 178 Taharepa Road, Taupo. 2730
ZL1UP Hall, E. W. H., 4 Bellevue Road, Tauranga. 3001
ZL1UPA Schut, W., 87a Hikutaia Road, Opotiki, P.O. Box 386, Opotiki. 3092
- ZL1UPD** Grayson, A. W., 56 Kemp Road, Kerikeri. 0470
ZL1UPF McKee, R. R., 9 Wattle Street, New Lynn, Auckland. 1007
ZL1UPG Hopkins, D. B. J., R.D. 1, Old Taupo Road, Putaruru. 2371
ZL1UPH Roberts, J. B., 43 Dominion Road, Whakatane. 3080
ZL1UPI Gee, J. B., 5 Paekitawhiti Street, Turangi. 2751
ZL1UPL Stewart, R. A. J., 52 Everglade Drive, Manukau Central, Auckland. 1701
- ZL1UPM** Dunne, G. M. (Mrs), P.O. Box 51-532, Pakuranga. 1730
ZL1UPO Moore, H. J., c/- 16 Bass Road, Mt Wellington, Auckland. 1006
- ZL1UPP** Sinclair, D. J., 86 Alexander Street, Howick. 1705
ZL1UPQ Morris, S. A., 7 McKinn Place, Fitzroy, Hamilton. 2001
ZL1UPR Riddick, P. J., 13 Stirling Street, Remuera, Auckland. 1005
ZL1UPT Donnelly, S. F., 28a Gallaway Street, Hamilton. 2001
- ZL1UPU** Adlam, R. A., 174 Bridge Street, Bulls. 5452
ZL1UPX McCann, K. M., 52 Campbell Street, Taurunui. 2600
ZL1UPY Gutmann, P. C., 24 Durness Place, Orewa, Auckland. 1461
ZL1UQC Beazley, L. (Ms), Post Office, Broadwood, Northland. 0571
ZL1UQD Christensen, A. L., 82 Donald Road, Kaitiaki. 0500
ZL1UQE Collis, M. V. (Ms), Park Road, R.D. 3, Waiuku. 1852
ZL1UQG Byrnam, S. J., 5 Te Anau Place, Tikipunga, Whangarei. 0101
- ZL1UQI** Taylor, R. J., 70 Ocean Road, Paraparaumu Beach. 6450
ZL1UQJ Reinhard (Snr), P. A., P.O. Box 301, Mangonui. 0557
ZL1UQL Carson, A. R., 5c Mair Street, Whangarei. 0101
ZL1UQN Gorter, T. A., 158 Candia Road, Henderson, Auckland. 1008
- ZL1UQO** Price, E. M. (Mrs), Brockburn Farm House, R.D. 1, Kaitiaki. 0500
- ZL1UQP** Pivac, Cheryl, 4271 Great North Road, Henderson, Auckland. 1008
- ZL1UQQ** Huber, C. (Ms), 80 Eugenia Rise, Totara Heights, Manukau. 1701
- ZL1UQU** Coombs, T. R. (Mrs), 13 Crispian Place, Weymouth, Auckland. 1702
- ZL1UQW** Wharton-Allen, R. J., c/- Tapu PDC, Thames Coast. 2850
ZL1URB King, Ralph, P.O. Box 38-569, Howick, Auckland. 1730
ZL1URE Boxell, G. R., 60 Oliver Road, Kihikihi. 2430
ZL1URF Lowe, M. C. (Mrs), c/- 22 Fisher Terrace, Whangarei. 0101
ZL1URG Evans-McLeod, R. J., 204 Whatawhata Road, R.D. 5, Hamilton. 2021
- ZL1URH** Anderson, E. W., 69 Nevada Road, Hamilton. 2001
ZL1URI Edridge, A. L. (Mrs), 5 Warwick Avenue, Hamilton. 2001
ZL1URJ Jones, R. (Mrs), 2/18 Meadowland Drive, Howick, Auckland. 1705
- ZL1URK** Huntly Power Station Amateur Radio Club, (Trustee C.J.Allan), c/- Huntly Power Station, Private Bag, Huntly. 2191
- ZL1URL** Anderson, R., c/- 4 Kuku Street, Tokoroa. 2392
ZL1URM Young, W. R., 81a Arthur Street, Onehunga, Auckland. 1006
- ZL1URN** Tweed, R. J., 33b Cyclarama Crescent, Massey, Auckland. 1008
- ZL1URO** Thomson, J. W., 31 Rotokauri Road, Newton, Hamilton. 2001
- ZL1URR** Foote, A. S., 73 Beaumaris Crescent, Ascot Park, Porirua. 6006
- ZL1URS** Ruysch, J., 1 Riverside Village, College Road, Edgecumbe. 3082
- ZL1URT** Kane, L. D. A., 5 Delamere Drive, Kawerau. 3083
ZL1URU Coppell, Jean, 128a James Street, Whakatane. 3080
ZL1URX Hodgson, A. J., P.O. Box 240, Whangamata. 3062
ZL1URY Barnett, J. R. (Mrs), 16 Pembroke Street, Moerewa. 0292
ZL1US Armstrong, M. A. S., 77 Queen Street, Pukekohe. 1800
ZL1USA Stephenson, A. J., 105 Burnley Terrace, Mt Albert, Auckland. 1003
- ZL1USB** Spellman, M. P., 8 Glenfield Road, Rotorua. 3201
ZL1USC Schoen, U., 41 Bay Vista Drive, Red Beach, Hibiscus Coast, Auckland. 1461
- ZL1USD** Smith, M. S., 38 Hamilton Road, Herne Bay, Auckland. 1002
- ZL1USE** Sopp, T. G., 28 Cumberland Crescent, Tauranga. 3001
ZL1USF Blackburn, P. W., 27 Saunders Road, Ashburton. 8300
ZL1USG Nettleingham, P., Matahui Road, R.D. 2, Katikati. 3063
ZL1USI Simpson, L. W., 21 Wiwrem Street, Tauranga. 3001
ZL1USK Jackson, G. J., 47 Townhead Crescent, Tauranga. 3001
ZL1USM Cross, S. D., 9 Howell Place, Tauranga. 3001
ZL1USN Graham, E. P., 18 Seaway Terrace, Tauranga. 3001
ZL1USO Hepple, R. A., P.O. Box 339, Whakatane. 3080
ZL1USS Stent, S. P., Cemetery Road, R.D. 9, Whangarei. 0121
ZL1UST Lisignoli, J. T., 216 Tramway Road, Hamilton. 2001
ZL1USW Krippner, D. A., R.D. 10, Hamilton. 2021
ZL1USY Taylor, D. K., P.O. Box 14-527, Panmure, Auckland. 1134
ZL1UT Still, W. J., 14 Meadowbank Road, Meadowbank, Auckland. 1005
- ZL1UTC** Cacciamani, T., 153 Ponsonby Road, Ponsonby, Auckland. 1001
- ZL1UTD** MacKinnon, J. S. S., Schollum Access Road, R.D. 3, Warkworth. 1241
- ZL1UTE** Neill, T. J., 10 Peter Buck Road, Avondale, Auckland. 1007
ZL1UTF Vowles, R. D., 37 Paramu Avenue, Birkdale, Auckland. 1310
- ZL1UTK** Howson, P. D., 44 Awatapu Drive, Whakatane. 3080
ZL1UTL Ogden, M. J., 86 Ngataringa Road, Devonport, Auckland. 1309
- ZL1UTP** Williams, L. K., Old Railway Road, Kumeu. 1250
ZL1UTQ Edson, D. A., 23 Riverview Road, Morrinsville. 2251
ZL1UTR Morey, D. A., 2/24 Fairview Road, Papatoetoe, Auckland. 1701
- ZL1UTS** Grey, D. G., 37 Albert Street, Otahuhu, Auckland. 1006
ZL1UTW Simmonds, R. N., 44 Rotokawa Street, Taupo. 2730
ZL1UU Twadell, A. S., 7 Prince Regent Drive, Pakuranga. 1706
ZL1UUA Bigg-Wither, H. G., c/- PDC, Te Kao. 0550
ZL1UUB Wilson, R. A., 28 Butler Road, Kerikeri. 0470
ZL1UUD Grimmer, S., 2/18 Scarlock Avenue, Browns Bay, Auckland. 1310

ZL1UUE

ZL1UUE Tognazzo, K. F., 34 Admiral Crescent, Flagstaff, Hamilton. 2001
ZL1UUF Harland, L. J., 9 Papanui Street, Tokoroa. 2392
ZL1UUG Taylor, D. C., P.O. Box 7251, Wellesley Street, Auckland. 1036
ZL1UUH Castle, F. A. (Dr), 10 Cedar Road, Mt Eden, Auckland. 1003
ZL1UUI Denyer, G. R., 64 View Road, Mt Eden, Auckland. 1003
ZL1UUIJ Ramsey-Turner, R., P.O. Box 50, Waimauku, Auckland. 1250
ZL1UUN McGowan, R. A., 7 Tasman Place, Kerikeri. 0470
ZL1UUP Hackett, G. N., 8 Valley Road, Browns Bay, Auckland. 1310
ZL1UUPQ James, A. B. (Mrs), P.O. Box 100-028, North Shore Mail Centre, Auckland. 1330
ZL1UUR Hughes, S. D. P., 63 Watea Road, Torbay, Auckland. 1310
ZL1UUS Singleton, K. M. L., 26 Cottrell Place, Manurewa, Auckland. 1702
ZL1UV Morch, J. H. S., 13 Lake Road, Northcote, Auckland. 1309
ZL1UVA Hitchens, W. H., 40 Glenlynne Avenue, Hamilton. 2001
ZL1UVC Green, G. A., c/- Joseph, Okura Road, R.D. 2, Albany, Auckland. 1331
ZL1UVE Tzathas, G., 77 Portage Road, Papatoetoe, Auckland. 1701
ZL1UVJ Bond, A. M. J., P.O. Box 536, Pukekohe. 1800
ZL1UVH Merriman, E. R., P.O. Box 9140, Geornto, Tauranga. 3030
ZL1UVI Barnett, L. E. S., 48 Wihongi Street, Kaikohe. 0400
ZL1UVJ Booth, P. B., 66 Bremner Avenue, Mt Roskill, Auckland. 1004
ZL1UVK Mumford, C. N., 216 Tramway Road, Hamilton. 2001
ZL1UVO Tilley, J. W., Paerata Ridge, R.D. 2, Opotiki. 3092
ZL1UWV Pidduck, T., R.D. 1, Great Barrier Island. 1240
ZL1UVX Denyer, R., 195 Glengary Road, Glen Eden, Auckland. 1007
ZL1UW Tinsley, H. G., 18 Grandview Road, Hamilton. 2001
ZL1UWA Chalmers, W. A., c/- Post Centre, Rotoma, Rotorua. 3250
ZL1UWC McDonald, J. G., P.O. Box 82-224, Highland Park, Auckland. 1730
ZL1UWE Simmonds, A. C., c/- 44 Rotokawa Street, Taupo. 2730
ZL1UWF Horn, Shiree, c/- Au'Naturel, 226 Alexandra Street, Te Awamutu. 2400
ZL1UWH Jackson, C. W., 159 Bridge Street, Opotiki. 3092
ZL1UWI Burns, S. W., 68 Harmel Road, Glendene, Auckland. 1008
ZL1UWK Willridge, D. W., 19 Hatherlow Crescent, Glenfield, Auckland. 1310
ZL1UWL Johnson, I. H., 347 West Tamaki Road, Glen Innes, Auckland. 1006
ZL1UWQ Neill, P. S., 10 Peter Buck Road, Avondale, Auckland. 1007
ZL1UWZ Read, J. J., 171 Hakanoa Street, Huntly. 2191
ZL1UX Hamilton Branch NZART (Inc), see Branch Directory
ZL1UXA Lamberton, J. J., 906a East Coast Road, Browns Bay, Auckland. 1310
ZL1UXD Goldstone, N. P., P.O. Box 351, Drury, Auckland. 1750
ZL1UXE Kempthorne, R. E., P.O. Box 133, Featherston. 5952
ZL1UXG Fimmel, L. A. (Miss), 19a Wapiti Avenue, Epsom, Auckland. 1003
ZL1UXL Garnett, N. J. G. (Miss), 2 Colleen Norma Crescent, Bucklands Beach, Auckland. 1704
ZL1UXN Taniwha, M. N., 19 Olive Terrace, Paraparaumu Beach. 6450
ZL1UXO Posel, W. W., 28 Matai Street, Hamilton. 2001
ZL1UXQ Walsh, J. C., 84 Paraoonui Road, Tokoroa. 2392
ZL1UXR Eltringham, R. J., 55a Fenton Mill Road, Kawerau. 3083
ZL1UXT Burt, A. C., 8 Alexander Street, Papakura. 1703
ZL1UXV Moebus, Stan, P.O. Box 14-098, Panmure, Auckland. 1134
ZL1UY Downard, T. V. E., 13 Riverlea Drive, Katikati. 3063
ZL1UYA Wahrlich, S. M. (Ms), 43 Nevada Road, Hamilton. 2001
ZL1UYB Andersen, H. L. C., 2/37 Tawera Road, Greenlane, Auckland. 1005
ZL1UYC Bell, C. G., 21 Leila Place, Manukau, South Auckland. 1701
ZL1UYH Attrill, J. T., 7 Tawa Street, Mt Maunganui. 3002
ZL1UYJ Douglas, G. A. M., 9 Williams Crescent, Port Wells, R.D. 6, Warkworth. 1241
ZL1UYN Smiley, R. C., 28 The Circle, Whangaparaoa, Auckland. 1463
ZL1UYW Payne, C. R., 245 Ellerslie-Panmure Highway, Panmure, Auckland. 1006
ZL1UYZ Phillips, D. S. M. (Dr), P.O. Box 36, Waihi Beach. 3060
ZL1UZ Truman, A. R., 63 Clark Road, Papakura. 1703
ZL1UZA McLaren, G. C., 1 Rosier Road, Glen Eden, Auckland. 1007
ZL1UZC Dix, D. G., 19 Highland Avenue, Titirangi, Auckland. 1007
ZL1UZD Woods, W., P.O. Box 317, Waiuku, Auckland. 1852
ZL1UZF Carroll, D. H., 66a Simpson Road, Swanson, Auckland. 1008
ZL1UZG Smith, L. A., 17 Church Street, Swanson, Auckland. 1008
ZL1UZJ Graham, J. M. (Mrs), 18 Seaway Terrace, Tauranga. 3001
ZL1UZL Tatoko, A. J., 2/156b Mt Wellington Highway, Mt Wellington, Auckland. 1006
ZL1UZM Schindler, W. H., 7/8 Westend Road, Herne Bay, Auckland. 1002
ZL1UZO McDonald, E. J. (Mrs), P.O. Box 82-224, Highland Park, Auckland. 1730
ZL1UZR Hoskins, J. D., 7 Ashby Avenue, St Heliers, Auckland. 1005
ZL1UZO Akroyd, L. T., 70 Daffodil Street, Titirangi, Auckland. 1007
ZL1UZY Hartley, N. A., Taipa, R.D. 3, Kaitia. 0500

ZL1VA Sears, V. C. A., 11 Roderick Street, Tauranga. 3001
ZL1VAA Holroyd, A. M., 60 Raumanga Heights Drive, Whangarei. 0101
ZL1VAE Traves, A. J. (Miss), P.O. Box 50, Ahipara, Northland. 0551
ZL1VAH Hopkins, A., 94 Bond Crescent, Forrest Hill, Auckland. 1310
ZL1VAI Brockbank, I. S., P.O. Box 493, Kerikeri. 0470
ZL1VAJ Moffatt, A., c/- Mobil Oil, P.O. Box 5008, Mt Maunganui. 3030
ZL1VAK King, A. B., c/- Knightsford, Springs Road, Parakai. 1250
ZL1VAL Nicholson, J. E., 14 Irene Crescent, Hamilton. 2001
ZL1VAP Dalton, R. W., 14 Chelsea Court, Bethlehem, Tauranga. 3050
ZL1VAR Walsh, R. M. (Miss), R.D. 1, Morrinsville. 2251
ZL1VAS Richards, Mary, 40 Glenlynne Avenue, Hamilton. 2001
ZL1VAT Hitchens, P. E., P.O. Box 238, Te Awamutu. 2400
ZL1VB Jones, R. C., P.O. Box 78, Whatawhata. 2050
ZL1VBA Short, D. R., P.O. Box 10-227, Te Rapa, Hamilton. 2035
ZL1VBB Borland, R., 20 Weka Street, Whakatane. 3080
ZL1VBD Boyes, D. G., P.O. Box 48, Mangonui. 0557
ZL1VBH Gedyde, D., 497 Maunganui Road, Mt Maunganui. 3002
ZL1VBL McKain, C. A., 8 Exeter Street, Mt Maunganui. 3002
ZL1VBN Allen, D. G., 32 Whittaker Road, Rotorua. 3201
ZL1VBP Siegenthaler, J. B., 654 Te Ngae Road, Rotorua. 3201
ZL1VBR Gates, L. J., 30 Hobson Street, Kawerau. 3083
ZL1VBS Osborne, M. J., 34 Cobham Drive, Kawerau. 3083
ZL1VBT Mitchell, J. D., Walters Road, R.D. 3, Karaka, Auckland. 1750
ZL1VBW Liddle, Y. D. M. (Mrs), 3 Hinemotu Avenue, Kawerau. 3083
ZL1VC Hall, L. J., 7 Kiwi Street, Matamata. 2271
ZL1VCA Agmen-Smith, C., 29 Sylvan Park Avenue, Milford, Auckland. 1309
ZL1VCC Hill, R., 15 Bertram Street, Rotorua. 3201
ZL1VCF Frost, C. A. (Ms), 55a Symonds Street, Onehunga, Auckland. 1006
ZL1VCH Hewitt, C. C. (Mrs), Harrisville Road, Tuakau. 1892
ZL1VCJ Jaques, C. N., 23 Edward Street, Pahiatua. 5470
ZL1VCL Lin, Y. C. (Miss), 539 Manukau Road, Epsom, Auckland. 1003
ZL1VCP Aspinall, J. (Mrs), 28 Mountain View Road, Otorohanga. 2564
ZL1VCR Aspinall, N. B., 70 Main Road North, Otorohanga. 2564
ZL1VCS Soich, G. A., P.O. Box 42, Hikurangi. 0251
ZL1VD Cutler, J. L., 12 The Companion Way, Whitty. 6006
ZL1VDA Adams, D. C. J., 137 Pukutua Street, Rotorua. 3201
ZL1VDE Anderson, D. F., 153 Raumanga Heights Drive, Whangarei. 0101
ZL1VDF Foster, D. M., 2 Carbery Place, Manurewa, Auckland. 1702
ZL1VE Webber, H. W. B., 120 Oak Grove, Greenwood Park, Private Bag, Tauranga. 3020
ZL1VEG Denize, B. M. (Ms), c/- NZ Post Shop, Dinsdale, Hamilton. 2030
ZL1VEY Harvey, N. M., R.D. 4, Pukekohe, Auckland. 1800
ZL1VF Moller, L. J., 228 Dobson Street, Ashburton. 8300
ZL1VFB Barber, F. A. (Ms), c/- NZ Hearld, P.O. Box 32, Auckland. 1015
ZL1VFM Bellamy, M. P., 36 Eaton Road, Hillsborough, Auckland. 1004
ZL1VFO Pople, I. O., Hinau Road, R.D. 1, Waimauku. 1250
ZL1VFR Burt, T. (Ms), 8 Alexander Street, Papakura. 1703
ZL1VFW White, F. W., 150 Pahioa Road, c/- Bethlehem P.O., Tauranga. 3050
ZL1VG Bicheno, N. C., 100 Wood Bay Road, New Lynn, Auckland. 1007
ZL1VGC Conroy, G. J., Hetherington Road, R.D. 2, Huntly. 2191
ZL1VGL Leong, G. R. D., Newstead, Hamilton. 2001
ZL1VGM Muir, G. P. (Mrs), 17 Keywella Drive, Conifer Grove, Takanini, Auckland. 1702
ZL1VH Sanne, J. H., 49 Cameron Road, Hamilton. 2001
ZL1VHS Sole, H. A., P.O. Box 437, Warkworth. 1241
ZL1VIC Clark, I. R., 48a Neil Avenue, Te Atatu North, Auckland. 1008
ZL1VID Parr, D. J., P.O. Box 68, Te Awamutu. 2400
ZL1VIM Martin, D. W., Flat 3b, 163 Tamaki Drive, Kohimarama, Auckland. 1005
ZL1VIN Belworthy, M. P., 42a Puriri Crescent, Rotorua. 3201
ZL1VIP Hildreth, D. N., P.O. Box 292, Kumeu, Auckland. 1250
ZL1VJB Busch, J. M., P.O. Box 372, Warkworth. 1241
ZL1VJC Collins, J. A., c/- P. Faulds, Minden Road, R.D. 6, Tauranga. 3021
ZL1VJP Patel, J. N. (Ms), 57 Burbank Avenue, Manurewa, Auckland. 1702
ZL1VJR Rowlands, D. J. (Mrs), 68 Raurimu Avenue, Onerahi, Whangarei. 0101
ZL1VJT Temarama, J., 22 Nevis Crescent, Tokoroa. 2392
ZL1VK Papakura Branch NZART (Inc), see Branch Directory
ZL1VL Lear, V. C., 33a Clydesdale Avenue, Howick, Auckland. 1705
ZL1VLA Woodfield, L. A. (Mrs), 72 Salamanca Road, Sunnynook, Auckland. 1310
ZL1VLD Doel, L. D., Headland Farm Park, R.D. 4, Whangarei. 0121
ZL1VLN Newell, F. L., 2 Lewis Street, Hamilton. 2001

ZL1YOT

- ZL1VLT** Speak, K., 6 Buchanan Street, Opatiki. 3092
ZL1VM Arnold, R. R., 21 Seaview Road, Milford, Auckland. 1309
ZL1VMA Armour, M. H., 34 Ennis Avenue, Pakuranga, Auckland. 1706
ZL1VMB Baylis, M. B., 1 Munro Street, Onerahi, Whangarei. 0101
ZL1VMD Pope, S. F. (Ms), George Crescent, Buckland, R.D. 2, Pukekohe. 1800
ZL1VMF Foster, M. S., 2 Carbery Place, Manurewa. 1702
ZL1VN McKain, M. L., 120a Burns Street, Leamington, Cambridge. 2351
ZL1VNE Whittles, N., 55a Symonds Street, Onehunga, Auckland. 1006
ZL1VNZ Blyde, L. M. (Mrs), Poland Street, Waikino, R.D. 2, Waihi. 3060
ZL1VO Whillans, F. L., 4/35 Killarney Street, Takapuna, Auckland. 1309
ZL1VOT Hart, Stephen, 4 Kiwi Place, Pukekohe, Auckland. 1800
ZL1VOW Giles-Pain, M. R., 69 Ardmore Road, Herne Bay, Auckland. 1002
ZL1VOX Giles-Pain, A. K., 69 Ardmore Road, Herne Bay, Auckland. 1002
ZL1VP Rule, V. J., 302 Whangaparaoa Road, Whangaparaoa. 1463
ZL1VPB Busch, P. N., 60 St John, P.O. Box 596, Opatiki. 3092
ZL1VPG Garlick, P., 60 Ardmore Road, Herne Bay, Auckland. 1002
ZL1VPJ Jarman, P. J., 17 Corrin Street, Hamilton. 2001
ZL1VPS Sole, P. W., P.O. Box 437, Warkworth. 1241
ZL1VQ Coppard, E. T., 11 Christensen Street, Waihi. 3061
ZL1VR Gilligan, C. R., 4 Lambert Street, Abbotsford, Dunedin. 9006
ZL1VRA Armstrong, R. C., 142 King Street, Cambridge. 2351
ZL1VRD Duxfield, L. R., 157 Ulster Street, Hamilton. 2001
ZL1VRJ Roff, V. J., 53 Wiltshire Place, Howick. 1705
ZL1VRK Kuipers, R., 4/5 Sarawia Street, Newmarket, Auckland. 1001
ZL1VRO Bodt, M. R., 36 Francis Curtis Avenue, Blockhouse Bay, Auckland. 1007
ZL1VRR Reddell, R. W., 394b Mt Albert Road, Mt Roskill, Auckland. 1004
ZL1VRS Simpson, Raewyn, 65 Hilton Road, Rotorua. 3201
ZL1VS Deverall, W. H., 24 Deuxberry Avenue, Northcote, Auckland. 1309
ZL1VSD Duxfield, S. C., 12 Croft Terrace, Huntly. 2191
ZL1VSG Gurr, S. R. (Miss), 3 Brightside Road, Stanmore Bay, Whangaparaoa. 1463
ZL1VSJ Scheffer, J. A., 103 Manuka Road, Glenfield, Auckland. 1310
ZL1VSK Kuebler, S. D. (Mrs), R.D. 1, Ngaruawahia. 2171
ZL1VST Woodfield, Kelly, 19a Ayton Drive, Glenfield, Auckland. 1310
ZL1VT Reynders, H. J., 24 Manly Drive, Robina 4226, Queensland, Australia
ZL1VTC Cron, Trish, 31 Kakanui Avenue, Hamilton. 2001
ZL1VTH Grant, T. I., 31 Winstone Avenue, Hamilton. 2001
ZL1VTP Penwarden, T. K., P.O. Box 325, Tokoroa. 2392
ZL1VU McIsaac, A. J., 26 Ferry Parade, Herald Island, Auckland. 1250
ZL1VVR Voorburgh, R., P.O. Box 36, Mangawhai. 1240
ZL1VVV Hall, S. W., 63 Karen Crescent, Hamilton. 2001
ZL1VX Boyd, R., 14 Dundas Street, Whitianga. 2856
ZL1VXH Hedayati, S., 7/16 Knight Avenue, Mt Albert, Auckland. 1003
ZL1VZ Frieberg, A. G., Unit 2, 15 John Davis Road, Mt Roskill, Auckland. 1004
ZL1WA Wills, Alma, 14a Graham Street, Pukekohe. 1800
ZL1WAG Neill, L. M. (Miss), 10 Peter Buck Road, Avondale, Auckland. 1007
ZL1WAH Humphreys, W. A., 25 Balmain Road, Birkenhead, Auckland. 1310
ZL1WAM McGrath, A., 73 Eban Avenue, Northcote, Auckland. 1309
ZL1WAR Walsh, D. A. (Ms), Maungatapu Road, R.D. 1, Morrinsville. 2251
ZL1WAT Percival, M. D., 32 Tammadge Street, Te Kuiti. 2500
ZL1WB Rowlings, B. H., 22 Tainui Street, Onerahi, Whangarei. 0101
ZL1WBH Herlihy, B., 20 Kea Place, Tokoroa. 2392
ZL1WBL Brewster, C. I., Farmer Road, Waitoa. 2050
ZL1WCJ Johnson, C. A. (Mrs), P.O. Box 60-202, Titirangi, Auckland. 1230
ZL1WD Davey, W. C., 8 Clarendon Road, St Heliers, Auckland. 1005
ZL1WDA Dalley, P. R., P.O. Box 14-195, Panmure, Auckland. 1134
ZL1WDC Cobussen, D. G., 1/123 Mt Albert Road, Mt Albert, Auckland. 1003
ZL1WDJ Judkins, W. D., 5/14 Heather Street, Parnell, Auckland. 1001
ZL1WDL Lamont, D. P., 3 London Street, Te Atatu North, Auckland. 1008
ZL1WDS Strong, D. G., P.O. Box 184, Warkworth. 1241
ZL1WDE Ziegler, D. A., 6 Brouder Place, Manurewa, Auckland. 1702
ZL1WE Edlin, Wally, P.O. Box 495, Papakura. 1730
ZL1WET Jackson, A. D., P.O. Box 10-300, Te Rapa, Hamilton. 2035
ZL1WF McNae, G. S., 7/45 Cairnfield Road, Whangarei. 0101
ZL1WG Boric, H. V., 27 Cleary Road, Panmure, Auckland. 1006
ZL1WGA Addison, G., 99 Richmond Avenue, Tokoroa. 2392
ZL1WGB Bold, G. T., 15 Kauri Road, Birkenhead, Auckland. 1310
ZL1WH Coe, P. H., 21 Marshall Avenue, Taupo. 2730
ZL1WHA Ahmu, H. E., 209 Wordsworth Road, Manurewa, Auckland. 1702
ZL1WHO Henderson, R. R., 72 Chartwell Avenue, Auckland. 1310
ZL1WHY Broberg, A. L., Unit 2 - 56 Evans Road, Glen Eden, Auckland. 1007
ZL1WI Milam, R. E., 3 Bush Road, Oratia, Auckland. 1007
ZL1WIC Chuang, I. C. (Miss), 15 Mataura Place, Manukau City, Auckland. 1701
ZL1WIL Collis, W. F., 143 Selwyn Street, Onehunga, Auckland. 1006
ZL1WIM MacKenzie, I. L., 33a Norman Road, Takapuna, Auckland. 1309
ZL1WIR Olsen, C., 4a Baird Road, Tokoroa. 2392
ZL1WIT Out, J. N., 64 Ellerton Road, Balmoral, Auckland. 1004
ZL1WIZ Stanley-Harris, K., 120 Remuera Road, Remuera, Auckland. 1005
ZL1WJA Breach, J., Omokoroa Road, Tauranga. 3001
ZL1WJG Goodenough, J. M., 754 East Coast Road, Browns Bay, Auckland. 1310
ZL1WJL Livsey, W. J. A., 30 Hagman Street, Stafford Heights, Brisbane 4053, Queensland
ZL1WJM Mason, J., 23 Williams Avenue, Pakuranga. 1706
ZL1WK MacDonald, J. E., 171 Cook Street, Howick, Auckland. 1705
ZL1WKS Singh, K. J., 23a Mickle Street, Te Atatu South, Auckland. 1008
ZL1WL Clarke, R. F. R., 12 Handley Place, Onerahi, Whangarei. 0101
ZL1WLH Henson, W. L., R.D. 1, Tryphena, Great Barrier Island. 1240
ZL1WM Ritchie, Graham, 38 Greenhaven Avenue, Papakura. 1703
ZL1WMA Ashton, J. M., 27a Atarangi Road, Greenlane, Auckland. 1005
ZL1WMD Pope, A. A. (Ms), George Crescent, Buckland, R.D. 2, Pukekohe. 1800
ZL1WN Biggar, R. G., Sunnyside Road, R.D. 3, Albany. 1331
ZL1WNZ Blair, R. A., 32 Awa Street, Otahuhu, Auckland. 1006
ZL1WO McGechie, P. C., 64 Marelle Drive, Red Beach, Whangaparaoa. 1461
ZL1WON Simson, A. M., 39 Challenger Street, St Heliers, Auckland. 1005
ZL1WOW Russell, A. D., 5 Albert Street, Papakura, Auckland. 1703
ZL1WP Johnstone, M. R., 12 Brooksmith Drive, Waiuku. 1852
ZL1WPG Grewal, P. S., 39 La Rosa Street, Green Bay, Auckland. 1007
ZL1WPJ Johnson, P. J., P.O. Box 60-202, Titirangi, Auckland. 1230
ZL1WPR Smith, P. R., Budden Road, R.D. 1, Te Awamutu. 2400
ZL1WQ Whitehead, E. J., Booms Hill, Kauaeranga, R.D. 2, Thames. 2821
ZL1WR Cullen, R. G., 6 Amokura Street, Waikanae. 6454
ZL1WRB Bloomfield, D., 191 Kauri Road, Whanauapai. 1250
ZL1WRC Costello, R. L., 4 Taratoa Street, Panmure, Auckland. 1006
ZL1WRD Deverell, R., 44 Mackersy Road, Whangarei. 0101
ZL1WRE Dunman, B., 47 Billah Street, Tokoroa. 2392
ZL1WRH Hughes, R. W., 16 Paton Avenue, Te Atatu South, Auckland. 1008
ZL1WRM Martin, R. E. J., 3 Spence Road, Henderson, Auckland. 1008
ZL1WSB Brown, S. L., 8 Wynsfield Gardens, St Heliers, Auckland. 1005
ZL1WSK Kuypers, S. G., 25 Tamatea Avenue, Point England, Auckland. 1006
ZL1WT Mackintosh, N. J., 102 Freeman Place, Te Awamutu. 2400
ZL1WTD Wood, T. D., 48 Reimers Avenue, Epsom, Auckland. 1003
ZL1WTP Petricevich, A. M., P.O. Box 26 484, Epsom, Auckland. 1030
ZL1WTT Taylor, G., 113/4 Wallace Road, Papatoetoe, Auckland. 1701
ZL1WTW Klinac, P. (Mrs), 45 Central Avenue, Papatoetoe, Auckland. 1701
ZL1WU Moseley, M. R., P.O. Box 296, 34 Domain Street, Waiuku. 1852
ZL1WV Fleetwood, F., 2/10 Tina Place, Pakuranga, Auckland. 1706
ZL1WVH Verhoef, W. C. M., 22b Santa Monica Place, Manukau City, Auckland. 1701
ZL1WW Spackman, T. J., 4 Colquhoun Place, Dinsdale, Hamilton. 2001
ZL1WWW Holden, H. R., P.O. Box 918, Maroochydyore, Queensland 4558, Australia
ZL1WWW Westerbaan, B. H., 38 Whittaker Street, Kihikihi. 2430
ZL1WX Prebble, N. W., 2/82 Knights Road, Rotheresay Bay, Auckland. 1310
ZL1WYS Barlett, R. K. M., 2/215 Glenfield Road, Glenfield, Auckland. 1310
ZL1WZ Deslandes, E. N., 579 Spencer Road, Lake Taerawa, R.D. 5, Rotorua. 3221
ZL1YOT King, M., 8 Albury Avenue, Epsom, Auckland. 1003

ZL2 CALLSIGNS

ZL2AA Gisborne Branch NZART (Inc), see Branch Directory
ZL2AAA White, M. C., 502 Huia Street, Hastings. 4201
ZL2AAC Bridgman, A. H. S., 261 Mitchell Street, Brooklyn, Wellington. 6002
ZL2AAD Bartlett, L. R., 9 Waverley Street, Te Hapara, Gisborne. 3801
ZL2AAE Kelling, A. R., 3 Dickson Street, Gisborne. 3801
ZL2AAF Duncan, R. E., 107 Ironside Road, Johnsonville, Wellington. 6004
ZL2AAG Barker, E. J., 12 Ashford Avenue, Palmerston North. 5301
ZL2AAH Sayers, R. K. F., 33 Bamber Street, Castlecliff, Wanganui. 5001
ZL2AAI McPake, E. G., 36 Wiktoria Road, Wanganui. 5001
ZL2AAJ Davis, S. B., 8 Kawai Place, Wanganui. 5001
ZL2AAK Tiro, T., 20 Bedford Street, Porirua. 6006
ZL2AAL King, K. U., 505 Fenwick Street, Hastings. 4201
ZL2AAN Thompson, R. N., 1010 Gordon Road, Hastings. 4201
ZL2AAO Shackel, M. W. O., C/- Post Office, Opuia. 0290
ZL2AAP Meek, P., 59 Alexander Avenue, Napier. 4001
ZL2AAQ Jeffers, R. J., 55a Jellicoe Street, Wanganui. 5001
ZL2AAU Starck, A. J., 177 Smart Road, R.D. 2, New Plymouth. 4621
ZL2AAV Cooper, R. L., P.O. Box 945, Caboolture 4510, Queensland, Australia
ZL2AAW Berdesbe, P. G., 12 Beach Street, Tangimoana. 5450
ZL2AAX Martin, L. H., 64 Glen Road, Stokes Valley, Wellington. 6008
ZL2AAY Turnbull, W. I., Villa 10, Tainui Village, 112a Clawton Street, New Plymouth. 4601
ZL2AB New Plymouth Amateur Radio Club, see Branch Directory
ZL2ABB Campbell, S. H., 20 Erin Street, Palmerston North. 5301
ZL2ABC Hughes, T., 10 Bainton Street, Papanui, Christchurch. 8005
ZL2ABE Erwood, E., 190 Waimea Road, Nelson. 7001
ZL2ABF Foley, T. J., 115 Taradale Road, Napier. 4001
ZL2ABJ Napier Branch NZART (Inc), see Branch Directory
ZL2ABL Bramley, K. J., 14 Rembrandt Avenue, Linden. 6006
ZL2ABM Elvy, D., 7 Norwich Street, Wellington. 6005
ZL2ABN Ridding, G. B., 10 Trevor Terrace, Paremata, Porirua. 6006
ZL2ABO Hughes, A. H., 117 Park Road, Palmerston North. 5301
ZL2ABR Parkinson, J. H., 1009 Rata Street, Hastings. 4201
ZL2ABS Tong, J., 44 Lakewood Avenue, Johnsonville, Wellington. 6004
ZL2ABT Turner, O. D., Cadman Road, Dannevirke. 5491
ZL2ABU van der Burgh, J. E. C., 8c Egmont Street, Wellington. 6001
ZL2ABV Mitchell, P. R., 6 Grey Street, Feilding. 5600
ZL2ABW Steer, D. W., 24 Dorset Avenue, New Plymouth. 4601
ZL2ABX Bishop, R. T., 1 Bowling Road, Greenmeadows, Napier. 4001
ZL2ABY Huggard, J. D., 22a Rimu Street, New Plymouth. 4601
ZL2ABZ Moore, J. A. W., 42 Wright Street, Wellington. 6002
ZL2AC Turnbull, P., Omokoroa Road, R.D. 2, Tauranga. 3021
ZL2ACA Barnett, W. J., R.D. 1, Upper Moutere. 7152
ZL2ACB Pengelly, A. P., 56 Wilberforce Street, Miramar, Wellington. 6003
ZL2ACC Sutherland, J. M., 600 Pepper Street, Hastings. 4201
ZL2ACE Greene, R. P., 6 Ararui Avenue, Castlecliff, Wanganui. 5001
ZL2ACF Staggpole, V. M., 49 Bould Street, Johnsonville, Wellington. 6004
ZL2ACG Glassey, R. B., 422 Jackson Street, Petone. 6008
ZL2ACJ Watson, J. S., 24 Gardener Street, Levin. 5500
ZL2ACL Myhill, J., 63 Deepdale Street, Burnside, Christchurch. 8005
ZL2ACN Lakeman, D. T., 55a Manuka Street, Masterton. 5901
ZL2ACO Jeffs, D. E., 14 Freyberg Crescent, Waikanae Beach. 6454
ZL2ACS Mai, G. A., P.O. Box 46-046, Herne Bay, Auckland. 1030
ZL2ACT Smith, G. F., 26 Sheridan Crescent, Upper Hutt. 6007
ZL2ACU Finlay, P. A., 14 Garden Road, Northland, Wellington. 6005
ZL2ACW Gottlieb, R., P.O. Box 27-137, Upper Willis Street, Wellington. 6037
ZL2ACX Hart, F. M., 2 Rotary Place, Paraparaumu Beach. 6450
ZL2AD Conroy, T. R., 8 Wairakei Road, Christchurch. 8005
ZL2ADA Anderson, J. K., 26 Hawaii Street, Taupo. 2730
ZL2ADB Barrow, G. W. B., 60 Bledisloe Crescent, Wainuiomata. 6008
ZL2ADD Lund, O. M., 1 Cherry Grove, Strathmore, Wellington. 6003
ZL2ADG Donovan, G. J., P.O. Box 191, M.P.C. 3701, B.S.B. Brunel, S.E. Asia
ZL2ADJ Billing, H. B., 8 Witako Street, New Plymouth. 4601
ZL2ADK Purdie, Cathy, 65 Hedge Street, Sanson. 5450
ZL2ADL Gilbert, T. J., 5a Newbourne Crescent, Blenheim. 7301
ZL2ADM Smith, I. G., Hill View, 94 Guppy's Road, Greenmeadows, Napier. 4001
ZL2ADN Stuart, J. D., 11 Kipling Street, Palmerston North. 5301
ZL2ADO Wilkinson, J., 69a Park Road, Carterton. 5951
ZL2ADP Vile, M. E., 12 Hicks Crescent, Waikanae Beach. 6454
ZL2ADR Burley, C. J., Ringawhata Road, R.D. 1, Otaki. 6471
ZL2ADT Brown, W. C., 9a Rawhiti Road, Nelson. 7001
ZL2ADU Gorton, H. J., 30 Dieffenbach Street, Opanake. 4854

ZL2ADW West, J. D., 140 Pioneer Road, New Plymouth. 4601
ZL2ADY Gallagher, B. G., 5 George Street, Dannevirke. 5491
ZL2ADZ Renner, W. G., C/- Post Office, Ormond. 3870
ZL2AE Lancaster, A. B., 47 Frank Wilson Terrace, New Plymouth. 4601
ZL2AEL Locke, A. E., 19 Duncan Street, Tawa. 6006
ZL2AEM Robinson, P. H., 10b Barriball Street, New Plymouth. 4601
ZL2AF Wilkinson, J., 30 Lancaster Street, Levin. 5500
ZL2AFC Burr, M. K., 48 Holborn Drive, Stokes Valley. 6008
ZL2AFF Clarkson, R. J., 44 Bedford Street, Patea. 5181
ZL2AFE King, F. B., Patons Rock, R.D. 2, Takaka. 7172
ZL2AFG Gentry, L. R., Parkhill Road, R.D. 2, Hastings. 4221
ZL2AFH Hardie, A. F., 54 Roxburgh Street, Mt Victoria, Wellington. 6001
ZL2AFI Nicholls, G. A., 465 Ruahine Street, Palmerston North. 5301
ZL2AFK Ford, P. L., 36 Akatea Road, Korokoro, Petone. 6008
ZL2AFL Jordan, N., Casa Loma, Western Hutt Road, Melling, Lower Hutt. 6009
ZL2AFM Hawke, P. D., 91a Tipahi Street, Nelson. 7001
ZL2AFN MacLean, A. K., P.O. Box 59, Raetihi. 5462
ZL2AFQ Burney, R. J., 115 Kowhai Street, Naenae, Lower Hutt. 6009
ZL2AFP Wassilief, C., 69 Tiber Street, Island Bay, Wellington. 6002
ZL2AFR Gorman, B. D., 66 Pacific Street, Timaru. 8601
ZL2AFT Anderson, B. P., 429 Albert Street, Palmerston North. 5301
ZL2AFU Udy, H. A. F., 1 Tudor Road, Pahiatua. 5470
ZL2AFV Titahi Bay Branch NZART (Inc), see Branch Directory
ZL2AFW Jones, B. N., 13 Taupata Street, Castlecliff, Wanganui. 5001
ZL2AFY Smith, I. M., 377 Station Road, Omokoroa, R.D. 2, Tauranga. 3021
ZL2AFZ Studd, G. C., c/- P. Primrose, F1/247 Kennedy Road, Napier. 4001
ZL2AG Bruce, J. R., R.D. 1, Taihape. 5457
ZL2AGC Waldmann, K. J., P.O. Box 47-047, Upper Hutt. 6430
ZL2AGD Kampkes, B., 135 Main Road, Bay View, Napier. 4001
ZL2AGH Marshall, A. W., 32 Plymouth Road, Hastings. 4201
ZL2AGI Giles, F. A., 1006 Sussex Street, Hastings. 4201
ZL2AGM Weaver, D. B., 6 Tankersley Crescent, Masterton. 5901
ZL2AGO Wolf, J. M., 12 Celeste Place, Glenfield, Auckland. 1310
ZL2AGP Weir, D. G., 4 St. Francis Grove, Lower Hutt. 6009
ZL2AGQ Cleveland, F. L., 38 Havelock Street, Mornington, Wellington. 6002
ZL2AGS Gottlieb, G. D. (Mrs), P.O. Box 27-137, Upper Willis Street, Wellington. 6037
ZL2AGT Williams, G. C., 18 Ronberg Street, Palmerston North. 5301
ZL2AGU Steel, G. J., Corner Arataki and Te Mata Roads, Havelock North. 4201
ZL2AGW Gillon, K. R., 5 Mountview Place, Motueka. 7161
ZL2AGX Young, Dawn, 309 Rosetta Road, Raumati South. 6450
ZL2AGY Marr, A. H., P.O. Box 3, Greytown. 5953
ZL2AH Reed, W. St. J., 11 Wood Street, Upper Hutt. 6007
ZL2AHA Wards, I. J., Manutahi, R.D. 2, Patea. 5181
ZL2AHB Douglas, L. S., 9 Swithland Place, Christchurch. 8004
ZL2AHE Wilson, A. J., 30 Adventure Drive, Whitby, Porirua. 6006
ZL2AHH Keong, P. W., P.O. Box 8108, Havelock North. 4230
ZL2AHI Meads, A. M., 272 High Street, Eltham. 4657
ZL2AHK Knofflock, T. C., 41 Scotland Street, Picton. 7372
ZL2AHL Harris, F. C., 53 Fairs Road, Milson, Palmerston North. 5301
ZL2AHM Smith, R. A., 121 Slacks Road, Palmerston North. 5301
ZL2AHN Ashley, R. A., Te Horo Beach Road, R.D. 1, Otaki. 6471
ZL2AHO Owen, D. W., 12 Whirinaki Street, Heretaunga, Upper Hutt. 6007
ZL2AHR Hawtree, G. R., 50 Fox Road, Wanganui. 5001
ZL2AHT Frost, H. A., 77 Meanee Road, Taradale, Napier. 4001
ZL2AHU O'Hara, E. R., 8 Miller Place, Masterton. 5901
ZL2AHX Greaney, E. C., 168 Waghorne Street, Napier. 4001
ZL2AHY Howard, C. B., 24b Clearmont Crescent, New Plymouth. 4601
ZL2AI 1st Kelburn 1909 Scout Group Radio Club, (Trustee T.R. Millar), 39 Ngaio Road, Kelburn, Wellington. 6005
ZL2AIA Steele, R., P.O. Box 13-467, Onehunga, Auckland. 1132
ZL2AIB Campbell, W. A., 225a Tukapa Street, New Plymouth. 4601
ZL2AIC Drogemuller, C. H., 25d Egmont Street, Wanganui. 5001
ZL2AID Williams, P. R., 126 Fairfield Road, Hawera. 4800
ZL2AIE Parker, W. J., P.O. Box 1, Blenheim. 7315
ZL2AIG Catt, G. D., 11 Taverner Street, Carterton. 5951
ZL2AIJ Newbery, M. D., 35 Crofton Road, Ngaio, Wellington. 6004
ZL2AIK Smyth, W. M., 49c Doralto Road, New Plymouth. 4601
ZL2AIL McManaway, P. H., R.D. 1, Matarawa, Carterton. 5951
ZL2AIO James, L. A., 110 Redwood Street, Blenheim. 7301
ZL2AIN Voss, R. B., Mill Road, Kopane, R.D. 6, Palmerston North. 5321
ZL2AIP Curry, R. G., 1 Flaxmere Street, Waikanae. 6454
ZL2AIQ Harvey, S. C., 802 Clive Street, Hastings. 4201
ZL2AIR Morris, S. W., Main Highway, Clarendon, Carterton. 5951
ZL2AIS Cramer, F. H., 34 James Street, Inglewood. 4651

- ZL2AIT** Whiting, P. C., c/- 38 Sanders Avenue, New Plymouth. 4601
- ZL2AIV** Mitchell, W. J., 12 Durham Street, Stoke, Nelson. 7001
- ZL2AIW** Sutherland, I. R., 28 Hillcrest Drive, Kelvin Grove, Palmerston North. 5301
- ZL2AIX** Gemmell, A. F., 56 Harris Street, Gisborne. 3801
- ZL2AIY** Hunter, D. R., 16 Torlesse Street, Wakatu, Nelson. 7001
- ZL2AIZ** Wright, L. L., 30 Discovery Drive, Whitby. 6006
- ZL2AJ** Parminter, H. V., 51a Rotherham Terrace, Miramar, Wellington. 6003
- ZL2AJA** Plum, B. F., 6 Porritt Place, Stoke, Nelson. 7001
- ZL2AJB** Hodge, L. D., 23 Kent Crescent, Palmerston North. 5301
- ZL2AJC** Hulse, R. L., 63 Riverside Drive, Lower Hutt. 6009
- ZL2AJD** Dodds, J. F., 13 Waikehe Street, Waikanae. 6454
- ZL2AJE** Carpenter, E. D., 27 Canterbury Street, Tamatea, Napier. 4001
- ZL2AJF** Vernon, J. H., 130 Mairangi Road, Wellington. 6001
- ZL2AJG** Giblin, A. G., 27 West Avenue, Richmond, Nelson. 7002
- ZL2AJH** Andrews, L. M., P.O. Box 10-575, The Terrace, Wellington. 6036
- ZL2AJJ** McHardy, R. A., 762 Gladstone Road, Gisborne. 3801
- ZL2AJK** Martin, E. O., 32 Frederick Street, Lower Hutt. 6009
- ZL2AJL** Sutherland, D. C., 23 Peakes Road, Wanganui. 5001
- ZL2AJM** Donovan, M. F., 16 Ngao Road, Waikanae. 6454
- ZL2AJQ** Compier, J. C., 611 Aberdeen Road, Gisborne. 3801
- ZL2AJR** Teward, G. J., 26 Horopito Road, Waikanae. 6454
- ZL2AJS** Lawn, B. A., 23 Hunter Street, Dannevirke. 5491
- ZL2AJV** Small, I. R., 60 Whakaipo Avenue, Taupo. 2730
- ZL2AJW** Marston, K., 20 Hickey Place, Opunake. 4854
- ZL2AJY** Donoghue, R. H., 10 Finnimore Terrace, Wellington. 6002
- ZL2AJZ** Wellington Polytechnic Radio Club, Private Box 756, Wellington. 6015
- ZL2AK** Rowson, L. T., 21 Kellyville Heights, New Plymouth. 4601
- ZL2AKC** Larkin, J. F. L., 20e Benefield Street, Wanganui. 5001
- ZL2AKD** Faulding, R. G., 5 Manuka Street, Palmerston North. 5301
- ZL2AKE** Watson, M. B., 25 Armagh Terrace, Marton. 5460
- ZL2AKF** Peffers, W. F., Spade Oak Vineyard, Main Road, Makauri R.D. 1, Gisborne. 3821
- ZL2AKG** McGonigal, J. W. R., 17 Surrey Street, Taradale, Napier. 4001
- ZL2AKH** Hayward, W. B., 23 Mt Vernon Place, Nelson. 7001
- ZL2AKI** Moles, G. J., 30 Elmira Avenue, Palmerston North. 5301
- ZL2AKJ** Freeth, C. A., 56 Fifehire Crescent, Nelson. 7001
- ZL2AKK** Moss, J. B., 9 Seyton Street, Stratford. 4700
- ZL2AKL** Howard, W. S., c/- Post Office, Bunnythorpe. 5453
- ZL2AKM** Glassey, R. B., 401 Featherston Street, Palmerston North. 5301
- ZL2AKN** Smith, L. K., P.O. Box 1119, Tauranga. 3015
- ZL2AKO** Oakley, J. W., Slipstream, P.O. Box 279, Waikanae. 6454
- ZL2AKQ** Littleford, R. H., 14a Bloomfield Terrace, Lower Hutt. 6009
- ZL2AKR** Roberts, E., 116 Kowhai Street, Naenae, Lower Hutt. 6009
- ZL2AKS** Taylor, D., 31 Ahuriri Street, Wellington. 6003
- ZL2AKT** Bundle, R. J., 12 Mahoe Street, Linden, Wellington. 6006
- ZL2AKU** Crosby, B. D., 28 Sheridan Crescent, Upper Hutt. 6007
- ZL2AKV** Copeland, R. N., P.O. Box 40-525, Upper Hutt. 6415
- ZL2AKW** King, T. C., 72 Chelmsford Street, Wellington. 6004
- ZL2AKX** Morris, E. C., 3 Peel Place, Wainuiomata. 6008
- ZL2AKY** Comber, C. M., c/- Calvery Rest Home, 47-61 Puriri Street, Hawera. 4800
- ZL2AKZ** Barden, T. W. A., Paradise Road, Coopers Beach, P.O. Box 5, Mangonui. 0557
- ZL2AL** Jennings, L. F., 203 Beresford Street, Hastings. 4201
- ZL2ALA** Kenny, A. R., 60 Pokohiwi Road, Normandale, Lower Hutt. 6009
- ZL2ALB** Broadbent, N. D., c/- Pakiri School, R.D. 2, Welsford. 1242
- ZL2ALC** Maxwell, H. J., 122 Kawi Road, Levin. 5500
- ZL2ALD** Gillespie, M. E., P.O. Box 667, Papakura, Auckland. 1730
- ZL2ALE** Roberts, A. L., P.O. Box 8024, Havelock North. 4230
- ZL2ALI** Clark, E. A., 88 Malberry Road, Mangere East, Auckland. 1701
- ZL2ALJ** Fletcher, A. B., 127 Melbourne Road, Island Bay, Wellington. 6002
- ZL2ALL** Tompkins, A. W., Halcombe Road, R.D. 5, Fielding. 5600
- ZL2ALM** Lovegrove, P. J., 145 Carlisle Road, Browns Bay, Auckland. 1310
- ZL2ALO** Shearman, A. J., 12 Somersset Road, Springvale, Wanganui. 5001
- ZL2ALP** Paton, P. J., 41 Hyde Street, Wainuiomata. 6008
- ZL2ALQ** Appleton, J. W., 17 Bone Crescent, Hawera. 4800
- ZL2ALR** Jury, J. M., "Glendower", Ponatahi Road, R.D. 2, Carterton. 5951
- ZL2ALT** Tong, A. C., 12 Princes Street, Hawera. 4800
- ZL2ALU** Turnham, P. E., 243 Waterloo Road, Lower Hutt. 6009
- ZL2ALW** Barnett, L. J., Manuhara Road, R.D., Pongaroa. 5470
- ZL2ALX** Tarrant, G. W., Rawhitirua, R.D. 8, Masterton. 5921
- ZL2ALY** Walker, C. M., 244a Te Moana Road, Waikanae. 6454
- ZL2ALZ** Healey, G. W., 78 Sidlaw Street, Strathmore Park, Wellington. 6003
- ZL2AM** Shirley, J. R., P.O. Box 19, Bay View, Napier. 4151
- ZL2AMA** Dwyer, M. B., P.O. Box 7313, Wellington. 6039
- ZL2AMB** Chinery, P. R. J., 192 High Street, Eltham. 4657
- ZL2AMC** Sargent, F. W., Schollum Road, R.D. 2, Morrinsville. 2251
- ZL2AMD** Lamont, D. H., 510 Kennedy Road, Napier. 4001
- ZL2AME** Heath, C. A., 9 Patutu Grove, Upper Hutt. 6007
- ZL2AMH** Dew, E. E., 55a McHardy Street, Havelock North. 4201
- ZL2AMI** Stewart, R. G., 105 Orangi Kaupapa Road, Wellington. 6005
- ZL2AMJ** Johnson, J. F. C., 15 Field Street, Upper Hutt. 6007
- ZL2AMK** Vendt, G. R., 60 Bird Grove, Stokes Valley. 6008
- ZL2AML** Warner, T. R., 32 Endeavour Street, New Plymouth. 4601
- ZL2AMM** Morris, S. J., 1 Sidlaw Street, Strathmore, Wellington. 6003
- ZL2AMO** Spackman, M. L., 2/168 Gloucester Street, Taradale, Napier. 4001
- ZL2AMP** Fretter, M. E., 111b Maxwell Road, Blenheim. 7301
- ZL2AMR** Feilding and Districts Radio Club, see Branch Directory
- ZL2AMS** Marton Branch NZART (Inc.), see Branch Directory
- ZL2AMT** Garmonsway, T. L., "Hiria", Rangiwea, R.D. 1, Taihape. 5457
- ZL2AMU** Ashe, D. A., 34 Wai-iti Crescent, Lower Hutt. 6009
- ZL2AMV** Mudford, D. W., 58 Le Quesne Road, Bay View, Napier. 4151
- ZL2AMY** Davies, D. D., 83 Glen Road, Raumati South. 6450
- ZL2AMZ** Humphris, G. J., 18 Horokiwi Road, Newlands, Wellington. 6004
- ZL2AN** Shepherd, E. R., 375 Brookfields Road, R.D. 3, Napier. 4021
- ZL2ANB** Fenton, F. A., 27 Blake Street, Waitara. 4656
- ZL2AND** Wallace, R. I., 21 Fox Street, Featherston. 5952
- ZL2ANE** Cooney, J. L., 53 Wainuiomata Road, Wainuiomata. 6008
- ZL2ANF** MacLean, H. R., 19 Turriff Crescent, Linden, Wellington. 6006
- ZL2ANG** Tipler, B. F., Kahouri Road, P.O. Box 400, Stratford. 4700
- ZL2ANI** McLeod, S. A., 4 Trevelyan Street, Onekawa, Napier. 4001
- ZL2ANJ** McNabb, G. M. (Mrs), 300 High Street, Motueka. 7161
- ZL2ANL** McNeill, J. H., P.O. Box 147, Marton. 5460
- ZL2ANN** Opunake Radio Club Inc, see Branch Directory
- ZL2ANP** Williamson, J. (J.), Waituna, 9 R.D. Feilding. 5600
- ZL2ANQ** Keane, P. M. (Rev), P.O. Box 1151, Campion Road, Gisborne. 3815
- ZL2ANR** Park, S. C., 14 Robert Burke Place, Henderson, Auckland. 1008
- ZL2ANS** Martin, D. W., 111 Avenue Road, Greenmeadows, Napier. 4001
- ZL2AOA** Walker, T. F., Mahaki, R.D. 1, Martinborough. 5954
- ZL2AOB** Pall, D. T., 7 Darwin Road, Gisborne. 3801
- ZL2AOF** Reardon, V. W., Autler Road, Mania. 4851
- ZL2AOG** Green, G. R., 7 Russell Street, Marton. 5460
- ZL2AOH** Sutton, Ralph, 12c Herbert Gardens, 186 The Terrace, Wellington. 6001
- ZL2AOI** Malkin, E., 4/412 Avenue Road West, Hastings. 4201
- ZL2AOJ** Ryder, S. F., 67 Gillespies Road, Upper Hutt. 6007
- ZL2AOK** Wallis, G. A., 42 Coronation Street, Spreydon, Christchurch. 8002
- ZL2AOL** McBeth, D. O., Postal Delivery Centre, Kawhia. 2451
- ZL2AON** Crossley, R. S., Flemington Road, Wanganui. 5001
- ZL2AOO** Sinclair, M. L., 1 Porritt Place, Tamatea, Napier. 4001
- ZL2AOP** Mackintosh, A. B., 34 Marian Drive, Gisborne. 3801
- ZL2AOR** Langevad, M. W., Grahams Beach Road, R.D. 4, Waiuku. 1852
- ZL2AOT** Sanders, K. D., c/- P.O. Box 31-312, Lower Hutt. 6315
- ZL2AOU** Howan, V. E. (Mrs), 7 Almora View, Ascot Park, Porirua. 6006
- ZL2AOV** McNeill, D. A., 58 Fraser Avenue, Johnsonville, Wellington. 6004
- ZL2AOW** Purvis, R. H., 37 Sispara Place, Beachhaven, Auckland. 1310
- ZL2AOX** Edwards, M. R., P.O. Box 189, Silverdale, Auckland. 1462
- ZL2AOZ** Davidson, W. E., R.D. 10, Palmerston North. 5321
- ZL2APA** Chippendale, J. G., 66 Reid Avenue, Hawera. 4800
- ZL2APB** Plank, E. W., 182 Bridge Street, Bulls. 5452
- ZL2APC** Burton, H., 23 Lynmouth Avenue, Karori, Wellington. 6005
- ZL2APD** Holmwood, E. A., 11 Newton Place, Palmerston North. 5301
- ZL2APE** Parnell, J. C., 87 Duncan Terrace, Kilbirnie, Wellington. 6003
- ZL2APF** Lusty, F. W., 40 Ihia Street, Waitara. 4656
- ZL2APH** Haisman, R. A., 27 Valley Road, Gisborne. 3801
- ZL2API** Gillette, H. C., 6 Mahoe Avenue, Palmerston North. 5301
- ZL2APJ** Vaughan, R. G., 205 Rosetta Road, Raumati Beach. 6450
- ZL2APL** Westwood, I. J., 95 Hillcrest Drive, Palmerston North. 5301
- ZL2APO** Leigh, P., 4 Parcel Court, Cromwell. 9191
- ZL2APP** Cliff, J. C. (Mrs), 102 Smithfield Road, Wanganui. 5001
- ZL2APQ** Aydon, A., 10c Ruri Street, Tahunanui, Nelson. 7001
- ZL2APR** Pope, T. H., 80 Victoria Street, Carterton. 5951
- ZL2APS** Sullivan, D. J., 56 Keapa Street, Levin. 5500
- ZL2APT**ROPATA, P. T., 11 Kityhawk Row, Bulls. 5452
- ZL2APV** Jury, G. V., 12 Aubrey Street, New Plymouth. 4601
- ZL2APX** O'Dwyer, M., 135 Guppy Road, Taradale, Napier. 4001
- ZL2APY** Hartwig, G., 66 Lincoln Street, Ashhurst. 5451
- ZL2APZ** Benson, K. J., 33 Trafalgar Street, New Plymouth. 4601
- ZL2AQ** Gabites, J. F., 83 Seaview Road, Paraparamu Beach. 6450
- ZL2AQC** Doyle, D., 47 Cashmere Avenue, Khandallah, Wellington. 6004

ZL2AQD

ZL2AQD Watson, J. E., 422/2 Queens Drive, Lyall Bay, Wellington. 6003

ZL2AQE Shorland, J. H., 12 Lenox Grove, Johnsonville, Wellington. 6004

ZL2AQH Voss, S. J., Mill Road, Kopane, R.D. 6, Palmerston North. 5321

ZL2AQI Cheyne, J. A., 12 Aberdeen Avenue, Palmerston North. 5301

ZL2AQK Millard, A. J., 34 Volga Street, Wellington. 6002

ZL2AQL Spearman, M. B., 41 Woods Avenue, Tauranga. 3001

ZL2AQN Heald, P. J., 64 Wyon Street, Christchurch. 8006

ZL2AQO Wilson, K. A. (Mrs), 80 Wycliffe Street, Onekawa, Napier. 4001

ZL2AQP Clouston, T. W., 28 Fox Street, Opunake. 4854

ZL2AQQ Ammundsen, J. G., 17 Satara Crescent, Khandallah, Wellington. 6004

ZL2AQR Crawley, R. J. C., R.D. 9, Mayfield, Ashburton. 8352

ZL2AQS Duckworth, P. D., 7 Einstein Street, Gisborne. 3801

ZL2AQT Benton, S. W., "Wainawhenua", Kahautara Road, R.D. 1, Featherston. 5952

ZL2AQV Smith, R. E., 8 Dell Road, Raumati South, Paraparaumu. 6450

ZL2AQX Macartney, R. A., 129 Seaview Road, New Plymouth. 4601

ZL2AQY Olson, E. L., 58 Titania Street, Stratford. 4700

ZL2AQZ Edgecombe, C. J., 10 Princes Street, Hawera. 4800

ZL2AR Central Hawkes Bay Branch NZART (Inc), see Branch Directory

ZL2ARD Schofield, D. T., 34 Kiwi Road, Raumati Beach. 6450

ZL2ARE Harris, L. W., 43a Cameron Road, Napier. 4001

ZL2ARF Lane, J. R., 3 Basset Place, Taradale, Napier. 4001

ZL2ARG Nelson Branch NZART (Inc), see Branch Directory

ZL2ARI Wills, A. J., 45 Ruahine Street, Paraparaumu. 6450

ZL2ARJ Webb, B. D., 71 Hillside Drive, Upper Hutt. 6007

ZL2ARK Wilkins, R. R., P.O. Box 8186, Havelock North. 4230

ZL2ARL Prior, R. T., 29 Duff Crescent, Palmerston North. 5301

ZL2ARN Stewart, D. G., 75 Nimmo Avenue East, Waikanae. 6454

ZL2ARP Collins, R. J., "L'Chayim", Peka Peka Road, R.D. 1, Waikanae. 6454

ZL2ARQ Pahl, D. G., P.O. Box 61, Motueka. 7161

ZL2ART McQuinlan, T., 6 Whanake Street, Titahi Bay. 6006

ZL2ARV Black, R. C., 25 Marsden Road, Stoke, Nelson. 7001

ZL2ARW Williams, P. R., 15 Pinny Avenue, Lower Hutt. 6009

ZL2ARX Pomfret-Brown, G. E., 29 Bishopdale Avenue, Stoke, Nelson. 7001

ZL2ARY Jenks, M. D., 25 Kirner Street, Christchurch. 8009

ZL2ARZ Collins, J. L., 5 Norrie Place, Tamatea, Napier. 4001

ZL2AS Hastings Branch NZART (Inc.), see Branch Directory

ZL2ASA Dinsdale, B., 14 Benmore Avenue, Palmerston North. 5301

ZL2ASB Anderson, N. H., 109 Aro Street, Wellington. 6002

ZL2ASC Denton, R. J., 17 Rangiora Terrace, Tahunanui, Nelson. 7001

ZL2ASD Darby, A. R., 47 McLaren Street, Maymorn, R.D. 1, Upper Hutt. 6421

ZL2ASE Williams, R. B., 35 Trelawney Road, Wainuiomata. 6008

ZL2ASF Fogarty, S. F., 5 McCarthy Crescent, Motueka. 7161

ZL2ASH Clark, B. S., 5 Mamaku Grove, Khandallah, Wellington. 6004

ZL2ASI Law, A., 19 Weaver Street, Oamaru. 8901

ZL2ASK Rawding, D., 12 Herbert Avenue, Raumati South. 6450

ZL2ASL Leitch, J. H., 3 Brooklyn Road, Carterton. 5951

ZL2ASO Sewell, J. R., 1 Riverside Grove, Hine Road, Wainuiomata. 6008

ZL2ASQ Dawson, E. K., 680 East Coast Road, Browns Bay, Auckland. 1310

ZL2ASR Gill, A. H., 84 McHardy Street, Havelock North. 4201

ZL2AST Groombridge, J. E., 15 Oakleigh Street, Maungaraki, Lower Hutt. 6009

ZL2ASW Avery, G. S., Camerons Line, R.D. 5, Feilding. 5600

ZL2ASY Currie, R. G., 75 Hair Street, Wainuiomata. 6008

ZL2ASZ Wardlaw, D. A., NZART, P.O. Box 40-525, Astral Towers, Upper Hutt. 6415

ZL2ATA Johnson, Janis, P.O. Box 174, Pahiatua. 5470

ZL2ATB Blackwell, F. N., 103 Kenmore Street, Newlands, Wellington. 6004

ZL2ATC Harris, E. J. (Mrs), 43c Cameron Road, Napier. 4001

ZL2ATE Manley, R. C., 22 Amberley Avenue, Palmerston North. 5301

ZL2ATH Erikson, A. M., 8a Cautley Street, Richmond. 7002

ZL2ATI Cartwright, K. C., 8 McNaughton Street, Waitara. 4656

ZL2ATL Lategan, P. A., 88 Ayton Drive, Whiti, Wellington. 6006

ZL2ATO Oborn, L. E., 91 Norton Park Grove, Lower Hutt. 6009

ZL2ATP Hursthouse, M. W. (Dr), 306 Princess Drive, Nelson. 7001

ZL2ATT Thompson, A. J., 11 London Terrace, Palmerston North. 5301

ZL2ATU Horn, I. G., 79 Thatcher Street, Castlcliff, Wanganui. 5001

ZL2ATV Clench, H. J., 22 Spinnaker Drive, Flagstaff, Hamilton. 2001

ZL2ATX Haskell, E. H. E., 1 Moana Terrace, Snells Beach, Warkworth. 1240

ZL2AU Wilson, W. C., 21 London Road, Korokoro, Lower Hutt. 6008

ZL2AUA Burch, M. A. G., 49 Kahu Road, Paremata, Porirua. 6006

ZL2AUB Moore, P. J., 54 Herbert Avenue, Palmerston North. 5301

ZL2AUD Martin, W., 4 Bella Grove, Naenae, Lower Hutt. 6009

ZL2AUE King, M., 110 Gordon Street, Masterton. 5901

ZL2AUF Blair, S. G., 15 Poplar Grove, Thorndon, Wellington. 6001

ZL2AUH O'Shea, P. F., 106a Frimley Avenue, Hastings. 4201

ZL2AUI Danrell, F. R., 1215 North Willowpark Road, Hastings. 4201

ZL2AUJ Catchpole, D., 25 Taipakupaku Road, Miramar, Wellington. 6003

ZL2AUK Leckie, D. A., 31 City View Grove, Harbour View, Lower Hutt. 6009

ZL2AUL Bird, J. W., 131 Whites Line East, Lower Hutt. 6009

ZL2AUN Francis, L. J., 26 Lee Road, Taradale, Napier. 4001

ZL2AUR Tong, Tse-Ying, 290a Ferguson Drive, Trentham, Upper Hutt. 6007

ZL2AUT Morton, L. W., 112 Union Street, Foxton. 5551

ZL2AUW Nash, A. L. J., 20 Seddon Street, Levin. 5500

ZL2AUX Lewer, D. H., 113 Popkapa Road, Marton. 5460

ZL2AUY Murphy, N. J., Villa 84, Masonic Retirement Village, Edith Street, Masterton. 5901

ZL2AUZ Blair, R. L., 12 Cleland Street, Palmerston North. 5301

ZL2AV Jenkins, I. J., 35 Oak Avenue, Paremata. 6006

ZL2AVA McLauchlan, A. A. W., 81 Parker Avenue, Levin. 5500

ZL2AVB Hargreaves, A. P., 22c High Street, Eltham. 4657

ZL2AVC McDermott, R. J. O., 35 Highbury Road, Kelburn, Wellington. 6005

ZL2AVF Gibbs, L. V., 19 Camellia Terrace, Lower Hutt. 6009

ZL2AVG Reynolds, M. G., 131 Mt Herbert Road, Waipukurau. 4176

ZL2AVH Chong, A. V., P.O. Box 54, Bay View, Napier. 4151

ZL2AVI Savage, R. B., 12 Hull Street, Oamaru. 8901

ZL2AVJ McNabb, M. D., P.O. Box 42, Collingwood. 7171

ZL2AVK Kane, D., 11 Bay Street, Petone. 6008

ZL2AVL Luscombe, G. W., Main Road, Waiouru. 5458

ZL2AVM Morris, R. H. C., 21 Rangoon Street, Khandallah, Wellington. 6004

ZL2AVQ Dement, F. W. H., 162 Bartholemew Road, Levin. 5500

ZL2AVR Dinnie, J. S., 27 Rodney Avenue, Te Horo Beach. Postal: P.O. Box 8, Te Horo. 6470

ZL2AVS Heath, B. O., 32 Nikau Street, Eastbourne. 6008

ZL2AVX Rhodes, C. J., 47 Fairs Road, Palmerston North. 5301

ZL2AVY Owen, M. L., 550 Kane Street, Pirongia. 2450

ZL2AW Bonnington, R. L., 744 Cable Bay Road, R.D. 1, Nelson. 7021

ZL2AWA Farquhar, W. E., 17 Stansell Avenue, Nelson. 7001

ZL2AWB Craigie, C. J., 45 Gillespies Road, Upper Hutt. 6007

ZL2AWC Wellington College Amateur Radio Club, (Trustee ZL2AOK), P.O. Box 16-073, Wellington South. 6039

ZL2AWE Cooke, P., 31 Kent Crescent, Palmerston North. 5301

ZL2AWF Alexander, D. G., 34 Tennyson Street, Petone. 6008

ZL2AWG Roberts, J. C., 40 Grahams Road, Christchurch. 8004

ZL2AWH Brosnan, D. C., 111 Flaxmere Avenue, Hastings. 4201

ZL2AWI Sherley, H. F., 37 Kiwi Road, Raumati Beach. 6450

ZL2AWJ Woodhouse, C. W., 51 Houtana Street, Lower Hutt. 6009

ZL2AWM Macdonald, K. A., 68b Chatsworth Road, Upper Hutt. 6007

ZL2AWN Lewis, L. D., 20 Horopito Road, Waikanae. 6454

ZL2AWR Fox, M., 112 Ngamotu Road, New Plymouth. 4601

ZL2AWS Sayers, P. A., 97 Happy Valley Road, Ohio Bay, Wellington. 6002

ZL2AWT Hopwood, F. B., 1 Ranara Court, Palmerston North. 5301

ZL2AWU Tiller, B. A., 37 Cedar Drive, Paraparaumu Beach. 6450

ZL2AWV Hawera Branch NZART (Inc.), see Branch Directory

ZL2AWY Williams, D. M., 5 Boons Valley Road, Waikawa, Pictou. 7372

ZL2AWZ Faupel, S. K., 92 Reeves Road, Papakura Heights, Auckland. 1703

ZL2AX Ward, J. G., Church Road, Makotuku, R.D. 7, Dannevirke. 5491

ZL2AXA Dewar, A. M., 248a Ohoro Road, Wellington. 6002

ZL2AXB Crawley, D. R. K., Campbell Road, R.D. 1, Wanganui. 5021

ZL2AXF Widmer, J. B., Otaraoka Road, R.D. 43, Waitara. 4656

ZL2AXG Young, W. D., 20 Rexwood Street, Carterton. 5951

ZL2AXH Aitchison, W. B., 10 Margaret Street, Wadestown, Wellington. 6001

ZL2AXI Leslie, G., 4 Reeve Street, Foxton. 5551

ZL2AXJ Holdsworth, R., 5 Best Street, Wainuiomata. 6008

ZL2AXK Sommerville, W. V., 21 Bridge View Road, Birkenhead, Auckland. 1310

ZL2AXL Harvey, P. R., 4a Norton Road, Otumoetai, Tauranga. 3001

ZL2AXN Crane, R. G., 1222a Dickens Lane, R.D. 1, Wanganui. 5021

ZL2AXO Mathers, R. W., P.O. Box 54, Pohara Valley Road, Takaka. 7172

ZL2AXP Latta, I. K., 31 Collingwood Street, Palmerston North. 5301

ZL2AXQ Rowlands, R. E., 55 Fairview Crescent, Kelburn, Wellington. 6005

ZL2AXR Ramsay, K. A., 130a Cheviot Road, Lowry Bay, Wellington. 6008

ZL2AXS Bowden, B. A., 205b Pattison Road, Hastings. 4201

ZL2AXT Bremford, J. D., 9 Winston Street, Crofton Downs, Wellington. 6004

ZL2AXU Wharton, J. H., 1 Raniera Street, New Plymouth. 4601

ZL2AXV Hulston, J. R., 7 Earlston Grove, Lower Hutt. 6009

ZL2AXW Andrew, P. J., 6 Eton Place, Palmerston North. 5301

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ZL2AYJ Visser, A., 72 McLeod Street, Upper Hutt. 6007

ZL2AYK Kelly, R. W., 406 South Road, Hawera. 4800

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ZL2AYP Scarfe, T. W., Belvedere Road, R.D. 1, Carterton. 5951

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122BOE Large, R. A., 44 Donnelley Drive, Wainuiomata. 6008

122BOF Nixon, S. M., 10 Carleton Terrace, Tawa. 6006

122BOG Joyce, G. T., Valley Road, Gisborne. 3801

122BOI Moretti, G. S., 12 Milverton Avenue, Palmerston North. 5301

122BOJ Harris, R. E., 57 Princess Street, Waitara. 4656

122BOL Biggins, B. F., 70 Lohia Street, Khandallah, Wellington. 6004

122BOM Phillips, O. K., 118 Long Melford Road, Palmerston North. 5301

122BOO Hope, M. R., P.O. Box 812, Blenheim. 7315

122BOP Bradley, R. L. (Rev), 277 Annesbrook Drive, Nelson. 7001

122BOQ Groat, J. E., "The Homestead", Pohangina Road, R.D. 10, Palmerston North. 5321

122BOS Grant, H. H., 12 Pettit Place, Nelson. 7001

122BOT Kennedy, S. R., 13a Aramoana Avenue, Devonport, Auckland. 1309

122BOU Carter, A. F., 30a Newman Avenue, Brightwater, Nelson. 7151

122BOV Griffiths, Anne, Main North Road, c/- Post Office, Urenui. 4655

122BOW Howan, A. R., 7 Almora View, Ascot Park, Porirua. 6006

122BOY Clarke, R. G., 3 Whitby Place, New Plymouth. 4601

122BOZ Flowers, F. J., 70 Hellyers Street, Birkdale, Auckland. 1310

122BPB Sandilands, L. C., 33 Field Street, Silverstream, Upper Hutt. 6007

122BPC Kuipers, E. V. (Ms), c/- 153 Nayland Road, Stoke, Nelson. 7001

122BPD Donovan, P. E., 389 Muritai Road, Eastbourne. 6008

122BPE Vennix, J. H., 89 Mitchell Street, Brooklyn, Wellington, P.O. Box 9029, Wellington. 6031

122BPF Cotter, M. C., 24 Rodney Street, Woburn, Lower Hutt. 6009

122BPG Harding, B. P., 55 Hillside Drive, Maoribank, Upper Hutt. 6007

122BPH Simmonds, J. H., Kahutara Road, R.D. 1, Featherston. 5952

122BPI Watt, I. D., P.O. Box 85, Featherston. 5952

122BPJ Maddock, R. H., 3 Percy Cameron Street, Avalon, Lower Hutt. 6009

122BPK Johns, B. K., 17 Tio Tio Road, Seatoun, Wellington. 6003

122BPL Kerslake, M. G., 11 Marama Terrace, Eastbourne. 6008

122BPO Mainwaring, P., 413b Otumoetai Road, Otumoetai, Tauranga. 3001

122BPP South Wairarapa Amateur Radio Club, see Branch Directory

122BPR Hoyt, B. E., 33 Workshop Road, Masterton. 5901

122BPS Stewart, P. J., 16 Marlborough Street, Silverstream, Upper Hutt. 6007

122BPT Craw, G. J., Coupers Road, R.D. 3, Palmerston North. 5321

122BPU Goodall, R. N., 31 Plymouth Road, Flaxmere, Hastings. 4201

122BPW Herbert, J. O., Mataro Road, R.D. 45, Urenui. 4655

122BPX Thompson, Shirley, 8 Dampier Avenue, Palmerston North. 5301

122BPZ McIvor, W. G., 4 Halifax Street, Wainuiomata. 6008

122BQA Nield, G. S., 46 McFadzean Drive, Blockhouse Bay, Auckland. 1007

122BQK Hawkes Bay VHF Group, c/- L Winton, 47 Richmond Street, Napier. 4001

122BQL Van Loemen, E., 71 Wingate Street, Christchurch. 8005

122BQM Brooking, S. C., 46 McClean Street, Wairoa. 4192

122BQW McNeil, W. G., 86 Domett Street, Opunake. 4854

122BQX Hoogeveen, S. (Bill), 58 Burns Street, P.O. Box 156, Hawera. 4800

122BR Hunt, A. F., 8 Manu Crescent, New Plymouth. 4601

122BRA Cash, I. M., 77 Grey Street, Waitara. 4656

122BRB Ballantyne, J. N., 10 Holford Street, New Plymouth. 4601

122BRC Ballantyne, J., 10 Holford Street, New Plymouth. 4601

122BRQ Grahame, K. S., 23 Marumaru Street, Marton. 5460

122BRS Russell, S. G., 85 Rugby Street, Palmerston North. 5301

122BRT Rogers, N. D., 4a Horne Place, Springlands, Blenheim. 7301

122BRU Allison, R., 8 Edinburgh Street, Dannevirke. 5491

122BS Ward, T. W., P.O. Box 4127, New Plymouth. 4615

122BSJ Knol, W., 66a Matai Road, Hataitai, Wellington. 6003

122BSL Matheson, J. D., "Karinga", West Bush Road, R.D. 8, Masterton. 5921

122BSP Lloyd, W. M., P.O. Box 4300, Mt Maunganui. 3030

122BSQ Lawrence, R. W. C., 25 Linwood Drive, Paraparaumu. 6450

122BSW Gedye, E. D. M., 15 Seine Street, Island Bay, Wellington. 6002

122BT Gaunt, L. V. (Mrs), 28 Balliol Drive, Tawa, Wellington. 6006

122BTB Large, M. (Mrs), 44 Donnelley Drive, Wainuiomata. 6008

122BTC Rawlings, R. F., 23 Seaview Crescent, Picton. 7372

122BTF Budge, D. (Dr), Heroncroft, 79 Motueka Quay, Motueka. 7161

122BTG Woodham, R. B., 18 Goulter Street, Seddon. 7353

122BTH Emslie, H. H., 8b Burleigh Road, Blenheim. 7301

122BTJ York, K. E., 28 Cubitt Street, Blenheim. 7301

122BTK Willings, H. K., 27 Oxford Street, Picton. 7372

122BTL Steenhart, L., c/- Tasman Store, Private Bag, Tasman, Nelson. 7150

122BTO Duncan, C. W., 15 Seaton Street, Atawhai, Nelson. 7001

122BTP Snow, R. J., 5 Rimu Street, Nelson. 7001

122BTQ Elwood, R. F., 44 High Street, Renwick. 7352

122BTR Simpson, Z. H., 25/188 Songer Street, Stoke, Nelson. 7001

122BTU Daken, T. R., 15 Scotland Street, Picton. 7372

122BTV Ching, G. R., 51 McLaughlan Street, Blenheim. 7301

122BU Biggs, R. J., 31a Elizabeth Place, New Plymouth. 4601

122BUK Stratton, G. J., c/- 475a High Street, Motueka. 7161

122BV Tozer, B. R., 15 Manly Park Avenue, Whangaparaoa. 1463

122BVL Walker, A. G., 5 Matthews Road, Wainuiomata. 6008

122BW Harling, D. S., 142 Quebec Road, Nelson. 7001

122BX Creswell, A. F., 36 Titiroanoa Road, Korokoro, Petone. 6008

122BY Smith, N. W., 16 Weka Street, Nelson. 7001

122BYD Lloyd, T. G., 22 Suffolk Street, Patea. 5181

122BZ Dunn, A. E., 31 York Street, Levin. 5500

122BZH Banks, G. J., 6b Virginia Place, New Plymouth. 4601

122BZN O'Donnell, A. A., 39 Lismore Street, New Plymouth. 4601

122CA Vernal, R. B., 90 Campbell Street, Karori, Wellington. 6005

122CB Bartlett, J. R., 18 Lynda Avenue, Paparangi, Wellington. 6004

122CC Mather, M. S., 17 Bloomfield Road, Gisborne. 3801

122CD Hamer, W. R., 187 Seaton Heights Road, Miramar, Wellington. 6003

122CDH Marshall, N. R. D., 58 Fitzherbert Avenue, Wanganui. 5001

122CDI Beard, M. E., P.O. Box 8162, Havelock North. 4230

122CDK McCormick, C. D. K., 76 Main North Road, Westshore, Napier. 4001

122CDM Mills, C. D., 106b Tremaine Avenue, Palmerston North. 5301

122CDN Dalrymple, M. B., 168 Stapleford Crescent, Browns Bay, Auckland. 1310

122CE Bicknell, J. A., Papawai Road, P.O. Box 67, Greytown. 5953

122CF Hodges, W., 36 Coster Street, Nelson. 7001

122CG Cornick, M. L., 23 Oakley Avenue, Marton. 5460

122CH White, Allison, 6 Rinaha Place, Rotorua. 3201

122CHB Girven, W. E. W., 594d Fergusson Drive, Upper Hutt. 6007

122CHJ Golding, W. J., 78a Joll Road, Havelock North. 4201

122CI Sinton, A. J., 6 Chester Street, Greenmeadows, Napier. 4001

122CID Morrison, N. J., 47 Leicester Street, Stoke, Nelson. 7001

122CJ Austin, P. H., 3/834 Atawhai Drive, Marybank, Nelson. 7001

122CJH King, M. R., 5 Poplar Street, Gisborne. 3801

122CJR Robertson, C. J., 23 Richmond Avenue, Karori, Wellington. 6005

122CK Fleming, J. C. (Mrs), 268 Courtney Street, New Plymouth. 4601

122CKC Ridge, J. D., 48 Awanui Drive, Waikanae. 6454

122CL Guest, R., 24a Mizpah Road, Browns Bay, Auckland. 1310

122CLI McArthur, E. J. B. (Dr), P.O. Box 126, Carterton. 5951

122CM Hastings, F. W., 114 Waterloo Road, Lower Hutt. 6009

122CMG Milne, T. G., Lynwood, Clovelly Road, Hindhead, Surrey GU26 6RP, England

122CN Grover, W. E., 57 Buller Street, New Plymouth. 4601

122CNE Emke, C. N., 12 Lemon Street, Otaki. 6471

122CO Neumer, G., 48 Ava Street, Petone. 6008

122COI Coe, D. W., 9 Roach Street, Napier. 4001

122CP Cormack, J. B. B., c/- Horowhenua Masonic Home, Queen Street East, Levin. 5500

122CPR Rood, P. A., 19 Ruru Street, Waikanae. 6454

122CQ Henderson, J. M., Howie Road, Fern Flats, R.D. 2, Marton. 5460

122CR Miller, N., 36 Stanley Street, Berhampore, Wellington. 6002

122CS Anderson, B. R. S., 7b Surrey Street, Stratford. 4700

122CSH Robinson, D. A., 23 Ngaio Gorge Road, Ngaio, Wellington. 6004

122CT Evans, Brian, South Featherston Road, R.D. 1, Featherston. 5952

122CTM Morris, C. T., Officers Mess No 86, RNZAF Base Ohakea, Private Bag, Palmerston North. 5320

122CV Fulton, J. M. L., 60 Shelbourne Street, Nelson. 7001

122CVA Adams, A. E., 91 Leslie Street, Waitara. 4656

ZL2CW

ZL2CW Gilbert, G. B., 10 Chesterton Street, Johnsonville, Wellington. 6004

ZL2CWA Armstrong, C., Trelawney Crescent, New Plymouth. 4601

ZL2CWL Rumens, K. W., 19 Duval Grove, Tawa, Wellington. 6006

ZL2CX Stenning, P. D., 11 Bay View Road, Atawhai, Nelson. 7001

ZL2CZ Clibborn, G. H., 30 Kent Terrace, Taradale, Napier. 4001

ZL2DA Appleton, D., 107 Chaucer Road North, Napier. 4001

ZL2DAH Hanover, D. A., 19 Gorton Street, Bulls. 5452

ZL2DAI Asteraki, D. L., 24 Chichester Drive, Silverstream, Upper Hutt. 6007

ZL2DAN Leyland, D. J., c/- Upper Hutt City Council, Private Bag 907, Upper Hutt. 6420

ZL2DAQ Weston, G. R., 2 Pirinoa Street, Feilding. 5600

ZL2DAX Mitchell, A. R. G., 39 Birmingham Street, Palmerston North. 5301

ZL2DB Brown, A. D., 154 Barnard Street, Wellington. 6001

ZL2DBA Jorgensen, L. H., 291 South Road, R.D. 4, New Plymouth. 4621

ZL2DBC Child, J., P.O. Box 82-109, Highland Park, Howick, Auckland. 1730

ZL2DBE Peart, C. J., Burnside Road, Takaka. 7172

ZL2DBO O'Donnell, Jill, 39 Lismore Street, New Plymouth. 4601

ZL2DBT Marsh, H. A., 2/187 Carrington Street, New Plymouth. 4601

ZL2DBX Jago, J. N., 166 Tasman Road, Opunake. 4854

ZL2DC Chisholm, W. P., 1 Camelia Court, Palmerston North. 5301

ZL2DD Scott, D. F., 68 Chatsworth Road, Silverstream. 6007

ZL2DE Johnson, D. H. (Mrs), 43 Elizabeth Street, Blenheim. 7301

ZL2DF Fraser, D. L., 9 Bentinck Street, Upper Hutt. 6007

ZL2DG Bayley, G. S., 22a Tamaki Street, Ngongotaha, Rotorua. 3202

ZL2DGW Whitley, D. G., 96 Clifford Road, Johnsonville, Wellington. 6004

ZL2DH Welsh, J. W., 35 Beach Road, Richmond. 7002

ZL2DI Shortt, J. H., 80 Savage Crescent, Palmerston North. 5301

ZL2DJ Dickson, Bill, 21 Grenville Street, New Plymouth. 4601

ZL2DJF Fox, D. J., 112 Ngamotu Road, New Plymouth. 4601

ZL2DK Keenan, D. S. J., 13 Ruru Crescent, Heretaunga Park, Silverstream. 6007

ZL2DL Limbrick, D. R., 45 Lynden Avenue, Northcote, Auckland. 1310

ZL2DM Christian, T. C., c/- 48 Gloaming Hill Road, Onepoto, Titahi Bay, Porirua. 6006

ZL2DMG Gentles, D. M. A. (Mrs), 298a Kennedy Road, Onekawa, Napier. 4001

ZL2DN Lucas, D. C., P.O. Box 283, Pacific Harbour, Fiji

ZL2DO McMillan, R. H., 7 Biria Terrace, Broadmeadows, Wellington. 6004

ZL2DP Budd, G. L., 59 The Drive, Tawa, Wellington. 6006

ZL2DPH Hargreaves, D. P., 2/48 Awamutu Grove, Lower Hutt. 6009

ZL2DQ Spring-Rice, B. N., Banksia Place, R.D. 4, Rotorua. 3221

ZL2DR Hearne, M. V., 56 Abraham Heights, Nelson. 7001

ZL2DS Horowhenua Branch NZART (Inc), see Branch Directory

ZL2DT Cordy, J. G. G., 50 Strathmore Avenue, Wellington. 6003

ZL2DU Millane, M. L., 132 Campbell Street, Karori, Wellington. 6005

ZL2DUG Data Users Group, P.O. Box 683, Gisborne. 3815

ZL2DW Hughes, W. J. T., 1/282 Aberdeen Road, Gisborne. 3801

ZL2DX Hannagan, C. C., 73 Strasbowge Street, Martinborough. 5954

ZL2DY Parsons, A. D., 30 John Street, Upper Hutt. 6007

ZL2DZ Brasell, C. R., Purchas Road, R.D. 2, Amberley. 8251

ZL2FA Hogan, A. V., Anglesea Street, Renwick. 7352

ZL2FAB Burgess, F. A., 24 Island Road, Gisborne. 3801

ZL2FAH Hamlin, F. A., 142b Buffalo Beach Road, Whitianga. 2856

ZL2FAH Hunt, R. (Mrs), 11 Lichfield Grove, Tauranga. 3001

ZL2FC Coutts, C. G., 19 Konini Street, Masterton. 5901

ZL2FD Butel, D., 39 Mulberry Street, Lower Hutt. 6009

ZL2FE Falkner, B. A., 49 Karina Terrace, Palmerston North. 5301

ZL2FF Hayward, R. S., 25 Trewavas Street, Motueka. 7161

ZL2FG Torrie, A. W., 100 Blue Pacific Parade, Riversdale Beach, Via Masterton. 5970

ZL2FH Garth, P. E., 101 Birrell Street, Gisborne. 3801

ZL2FI Gaunt, P. J., 28 Balliol Drive, Tawa, Wellington. 6006

ZL2FJ Withy, D. G., 16 Kenmore Street, Newlands, Wellington. 6004

ZL2FK House, T. S. R., 4/56 Golf Road, Tahunanui, Nelson. 7001

ZL2FL Kuring, K. C., 60b Eatwell Avenue, Paraparaumu Beach. 6450

ZL2FM Burr, E. J., 87 Stanley Road, Gisborne. 3801

ZL2FN Williams, E. F., 231a Mangorei Road, New Plymouth. 4601

ZL2FO Hawtree, Val, 50 Fox Road, Wanganui. 5001

ZL2FOX Claydon, A. C., 10 Dawn Rise, Glenview, Hamilton. 2001

ZL2FP George, S. B., 7 Te Whena Place, Waitara. 4656

ZL2FPL Little, F. P., 203a Stokes Valley Road, Stokes Valley, Lower Hutt. 6008

ZL2FQ Burgoyne, T. A., 3 Shakespear Walk, Nelson. 7001

ZL2FR Dyett, N. D., 71 Coutts Street, Wellington. 6003

ZL2FS Priest, J. R., 26 Woolcombe Terrace, New Plymouth. 4601

ZL2FU Hird, E. J., 61 Mantell Street, Seatoun, Wellington. 6003

ZL2FV Richter, B. E., 706d Pioneer Highway, Palmerston North. 5301

ZL2FW Harbridge, L. W., 20 Mascot Street, Tawa. 6006

ZL2FWE

ZL2FX Swarbrick, A., 2 Hunter Avenue, Richmond. 7002

ZL2FY Billington, S. G., 28 Herbert Avenue, Palmerston North. 5301

ZL2FZ Harkett, R. J., 15b Alfred Street, Palmerston North. 5301

ZL2GA Reeve, R. P., 5 Eginton Street, Motueka. 7161

ZL2GB Johnson, D. F. T., 7 Pinehaven Road, Upper Hutt. 6007

ZL2GC Little, Allen, 7 Earl Street, Levin. 5500

ZL2GQ Ruane, M., 27 Norton Park Avenue, Fairfield, Lower Hutt. 6009

ZL2GQC McCormick, R. P., c/- J Gillies, Herbert Garden Apt 10c, 186 The Terrace, Wellington. 6001

ZL2GD Daniel, A. G., 39 Sunrise Boulevard, Tawa, Wellington. 6006

ZL2GE Evans, G. R., 30 Margaret Road, Raumati Beach. 6450

ZL2GEO Girling, G. F., 9 Meads Place, Bulls. 5452

ZL2GF Cooper, C., 275 Muritai Road, Eastbourne, Wellington. 6008

ZL2GG Smith, W. T., 17 Oxford Street, Palmerston North. 5301

ZL2GH Attewell, B. E., 19 Iranui Road, Gisborne. 3801

ZL2GI Gilbert, Win, 11 Bushey Way, Maungaraki, Lower Hutt. 6009

ZL2GIS Data Users Group, P.O. Box 683, Gisborne. 3815

ZL2GJ Pearce, R. A. (Bob), 3 Strasbourge Street, Martinborough. 5954

ZL2GL Motueka Branch NZART, see Branch Directory

ZL2GK Dormer, F. G., 18 Marquet Place, Tairua, via Thames. 2853

ZL2GM Irwin, W. P. M., 26 Bronte Street, Nelson. 7001

ZL2GMP Pollock, G. M. (Mrs), 516 Wellington Road, Marton. 5460

ZL2GN Malabar, R. S., 9 Messenger Terrace, Okara. 4650

ZL2GO Fownes, H. G., 71 Rimu Road, Paraparaumu. 6450

ZL2GP Rubay, J., Radio Frequency Service, P.O. Box 5063, Palmerston North. 5315

ZL2GQ Topliss, P. G., 7 Victoria Heights, Nelson. 7001

ZL2GR Stiles, G. R., 376b Hardy Street, Nelson. 7001

ZL2GRI Crone, W. G., 298b Kahutia Street, Gisborne. 3801

ZL2GRM Trim, G. J., c/- Postal Centre, Makaraka, Gisborne. 3830

ZL2GRZ Zambon, G. R., 5 Mitre Grove, Upper Hutt. 6007

ZL2GS Henry, A. S., 8 Crescent Street, Richmond. 7002

ZL2GT Napier Amateur Radio Club Inc (Contest), 3 Forsyth Street, Taradale, Napier. 4001

ZL2GV Hutton, J. D., 68 Bartholomew Drive, Grandview Estate, Hamilton. 2001

ZL2GW Beatson, A. P., Orinoco, R.D. 1, Motueka. 7161

ZL2GWN Nichol, G. W., 152 Breaker Bay Road, Wellington. 6003

ZL2GY Tallie, L. I., 8 Findlay Street, Mangawhai. 1240

ZL2GZ Panckhurst, K. D., 117 Whitaker Street, Gisborne. 3801

ZL2HA Gentry, L. J. (Mrs), 8 Chudleigh Grove, Churton Park, Wellington. 6004

ZL2HAM Schollum, W. D., P.O. Box 492, Gisborne. 3815

ZL2HB Stephens, D. A., 2 Riverbend Road, Napier. 4001

ZL2HBC Chandler, H. B., 34 Keith Street, Palmerston North. 5301

ZL2HC Bradbury, N. H., 19 Avon Street, Waterloo, Lower Hutt. 6009

ZL2HD Andrews, John, 66 Khandallah Road, Khandallah, Wellington. 6004

ZL2HE Law, A. E., 68 Ruahine Street, Dannevirke. 5491

ZL2HF French, W. B., 4 Rata Place, Masterton. 5901

ZL2HG Breen, P. W., Poraiti, R.D. 2, Napier. 4021

ZL2HIS Sutherland, N., 36 Paremata Street, Atawhai, Nelson. 7001

ZL2HJ Garrett, W. E., 412 Devon Street East, New Plymouth. 4601

ZL2HK Wakely, J. R., 109 Mt View Road, Wanganui. 5001

ZL2HL Turfrey, G. A., 4b Blundell Avenue, Waipukurau. 4176

ZL2HM Moore, P. R., 99 Randwick Crescent, Moera, Lower Hutt. 6009

ZL2HO Warner, B. A., 23 City View Grove, Harbour View, Lower Hutt. 6009

ZL2HP Kendrick, T. J., 3 Ascot Street, Palmerston North. 5301

ZL2HQ Harris, G. F., 15 Montana Road, Upper Hutt. 6007

ZL2HR Beattie, P., 43 Gordon Street, Lower Hutt. 6009

ZL2HRL Lightwood, H. R., 213 Howick Road, Blenheim. 7301

ZL2HS Shennan, C. V., State Highway 3, P.O. Box 30, Turakina. 5152

ZL2HT Hooker, D. D., 1a Reeve Drive, Havelock North. 4201

ZL2HU Holdom, K. A., 31 St Johns Terrace, Tawa, Wellington. 6006

ZL2HV Hutt Valley Branch NZART (Inc), see Branch Directory

ZL2HW Marsh, N. O., 16 Harris Street, Waitara. 4656

ZL2HX Cossgrave, D. A., 7 Torquay Terrace, Wellington. 6002

ZL2HY Devenport, B., 1782 Whararata Road, R.D. 1, Gisborne. 3821

ZL2IA Winton, L. J., 47 Richmond Street, Napier. 4001

ZL2IAB Thompson, I., 8 Dampier Avenue, Palmerston North. 5301

ZL2IB Dannevirke Branch NZART (Inc), see Branch Directory

ZL2IC Sharman, L. A., 43 Tom Parker Avenue, Napier. 4001

ZL2ID Appleton, C., c/- New Zealand Forest Research Institute Ltd, Private Bag 3020, Rotorua. 3220

ZL2IFA Andrews, I. F., 66 Shakespeare Avenue, Upper Hutt. 6007

ZL2IG Tombs, E. P., Ihakara, R.D. 1, Levin. 5500

ZL2IHW White, I. H., 10 Lindaver Grove, New Plymouth. 4601

ZL2II Caldwell, D. G., 88 Jubilee Road, Khandallah, Wellington. 6004

ZL2IJ Eastwood, R. J., 63 Shepherd Road, Taupo. 2730

ZL2IK Mulhare, P. J., 1231 Pipiwai Road, R.D. 6, Whangarei. 0121

- ZL2IL** Pottinger, R. S., 32 De Menech Grove, Avalon, Lower Hutt. 6009
- ZL2IM** Brown, P. W., 20 Nevada Drive, New Plymouth. 4601
- ZL2IN** Crumpton, R. E., 27 Kapiti Crescent, Titahi Bay. 6006
- ZL2IO** Collins, E. S., Main Road, Wakapuaka, R.D. 1, Nelson. 7021
- ZL2IP** Barnes, E. J., 790 Upper Durham Road, R.D. 8, Inglewood. 4651
- ZL2IQ** Wills, M. J., P.O. Box 31-227, Lower Hutt. 6315
- ZL2IR** Cuttriss, N. A., 40 Redvers Drive, Belmont, Lower Hutt. 6009
- ZL2IS** Were, G., 180 Regan Street, Stratford. 4700
- ZL2ISA** Finneran, F., 83 Peel Place, Wainuiomata. 6008
- ZL2IT** Lilley, E. C. C., 1b Harvey Road, Napier. 4001
- ZL2IU** Purdey, R. G., 7 Burmuda Grove, Paraparaumu. 6450
- ZL2IV** Gorman, D. M., P.O. Box 1613, Wellington. 6015
- ZL2IVN** Win, I. E., 4 Mimihau Grove, Wainuiomata. 6008
- ZL2IW** Carter, R. S., 269 Ngaho Street, Rangiri, R.D. 3, Blenheim. 7321
- ZL2IX** Parker, C. H., Tiraumea Road, Pahiatua. 5470
- ZL2IZ** Bartleet, J. R., 165 Valley Road, Gisborne. 3801
- ZL2JA** Wanganui Branch NZART (Inc.), see Branch Directory
- ZL2JAD** Dunlop, J. A., 105 Kelburn Parade, Kelburn, Wellington. 6005
- ZL2JB** Rawiti, B. R. M., 1/6 Bloomfield Place, Onerahi, Whangarei. 0101
- ZL2JC** Cook, S. A., Awakino Road, R.D. 1, Te Kuiti. 2500
- ZL2JD** Duncan, J. R., 7 Crown Hill, Onepoto, Titahi Bay. 6006
- ZL2JDB** Baeyerzt, J. D., 45 Ingestre Street, Wanganui. 5001
- ZL2JDR** Robertson, J. D., 3c Durham Avenue, New Plymouth. 4601
- ZL2JE** Morison, R. D., 40 Oregon Drive, Taupo. 2730
- ZL2JG** Anderson, G. A., 20 Leybourne Avenue, Waikanae. 6454
- ZL2JH** Nicol, D. S., 12 Hewitts Road, R.D. Linton. 5450
- ZL2JI** Thompson, J. P., 1 Healey Place, Gisborne. 3801
- ZL2JIM** Craig, J. P., 52 Wrantage Street, New Plymouth. 4601
- ZL2JJ** Byam, S. P., R.D. 2, Waverley. 5182
- ZL2JJM** Maangi, J. J., 8 Lockwood Crescent, Taita, Lower Hutt. 6009
- ZL2JK** Butler, D. B., Sims Road, R.D., Te Horo Beach. 6470
- ZL2JKS** Sorensen, J. K. (Miss), 18 Newton Street, New Plymouth. 4601
- ZL2JL** Prime, D. R., 57 Waerenga Road, Otaki. 6471
- ZL2JM** Moore, J. A., 12 Thomas Place, Foxton Beach. 5551
- ZL2JN** Hodder, A. A., 394 Somme Parade, Wanganui. 5001
- ZL2JO** Lambert, N. H., 7 Sunbrae Drive, Silverstream. 6007
- ZL2JOE** Abrahams, J. D., 1 Willis Street, Marton. 5460
- ZL2JON** Robinson, J., 9 Watson Street, Bulls. 5452
- ZL2JP** Sarten, C. J. (Mrs), 212 Coronation Avenue, New Plymouth. 4601
- ZL2JPD** Christian-Davis, J. B. (Ms), 23 Humphries Grove, Titahi Bay, Porirua. 6006
- ZL2JPL** Watkins, A. S. R., P.O. Box 4195, New Plymouth. 4615
- ZL2JR** Robertson, J., 100 Cluny Road, Pimlinton. 6006
- ZL2JS** Black, I. W., 46 Harris Street, Marton. 5460
- ZL2JSB** Barnes, S., 31 Brooklands Road, Nelson. 7001
- ZL2JT** Mackie, J. B., 8 Talara Street, Stoke, Nelson. 7001
- ZL2JV** Crawford, C. R. H., 20 Chapman Crescent, Naenae, Lower Hutt. 6009
- ZL2JW** Winthrop, G. J., 41 Naenae Road, Lower Hutt. 6009
- ZL2JWS** Smith, J. W., 256 Waiwhetu Road, Lower Hutt. 6009
- ZL2JX** Hodgson, E. R., 20 Colombo Street, Palmerston North. 5301
- ZL2JY** Vincent, G. C., 33 Hunia Terrace, Himatangi Beach. 5551
- ZL2JZ** Jury, E. G., "Glendower", Ponatahi Road, R.D. 2, Carterton. 5951
- ZL2KA** Hearne, W. R., 59 Abraham Heights, Nelson. 7001
- ZL2KB** Kapiti Branch 68 NZART (Inc.), see Branch Directory
- ZL2KBS** Waterson, I. B., 4a Antonio Street, P.O. Box 246, Stratford. 4700
- ZL2KC** Moess, C. R., 13 Churchill Avenue, Feilding. 5600
- ZL2KCM** Mitchell, K. C., Sandridge Farm, R.D. 2, Marton. 5460
- ZL2KD** Keegan, R. J., 11 Malaghan Grove, Johnsonville, Wellington. 6004
- ZL2KE** Smith, W. A. D., 343 Devon Street West, New Plymouth. 4601
- ZL2KEN** Dewar, D. B., 7 Richardson Avenue, Gisborne. 3801
- ZL2KF** Fellows, S. K., 15 Fremont Grove, Upper Hutt. 6007
- ZL2KG** Green, R. D., 377 Mangorei Road, New Plymouth. 4601
- ZL2KH** Symon, Roy, 25 Annadale Street, New Plymouth. 4601
- ZL2KJ** Thompson, M. M. (Mrs), 19 Bideford Street, New Plymouth. 4601
- ZL2KK** Kerr, R. F., 78 Southgate Road, Southgate, Wellington. 6002
- ZL2KL** Johns, T. H., 4 Sydney Place, Wanganui. 5001
- ZL2KN** Trainor, A. P. T., 118 Dimock Street, Titahi Bay, Wellington. 6006
- ZL2KO** Manawatu Branch NZART Inc., see Branch Directory
- ZL2KP** Lowe, E. E., 17 Ellesmere Crescent, Palmerston North. 5301
- ZL2KQ** Larsen, K., R.D. 44, Urenui. 4655
- ZL2KR** Cole, K. R., 10b Pohutukawa Crescent, Raumati Beach. 6450
- ZL2KS** Marlborough Branch NZART Inc., see Branch Directory
- ZL2KT** Brooker, R. G., Ikanui Road, Hastings. 4201
- ZL2KV** Martin, C. J. T., Mountain Road, Inglewood. 4651
- ZL2KW** Betteridge, O. J., 8 Chambers Street, Napier. 4001
- ZL2KWI** Manze, J. A., 10/4 Derby Street, Mt Victoria, Wellington. 6001
- ZL2KX** Wickstead, C. G., 1/25 Avondale Road, Taradale, Napier. 4001
- ZL2KZ** Kingston, G., 53 Tannadyce Street, Wellington. 6003
- ZL2LA** Vivian, B., 399 Mangorei Road, New Plymouth. 4601
- ZL2LAB** Vidulich, M. J., 36 Montana Road, R.D. 5, Bridge Pa, Hastings. 4221
- ZL2LB** Milner, M. O., 38 Lincoln Avenue, Tawa, Wellington. 6006
- ZL2LC** Chapman, M. A., 11 Gibbs Place, Kinloch, R.D. 1, Taupo. 2730
- ZL2LD** Munn, P. M., 2 Kereru Place, P.O. Box 446, Masterton. 5915
- ZL2LF** Dingley, P. D., P.O. Box 4191, Marewa, Napier. 4030
- ZL2LG** Dunning, S. P., 17 Kanpur Road, Wellington. 6004
- ZL2LI** Simpson, C. J. C., 125 Broderick Road, Johnsonville, Wellington. 6004
- ZL2LJ** O'Grady, P. L., 8 Cambridge Street, Tawa. 6006
- ZL2LK** Taylor, T. J. A., 37 Riversdale Drive, New Plymouth. 4601
- ZL2LKS** Shotton, L. K., 58a Geraldine Crescent, Palmerston North. 5301
- ZL2LL** Sutherland, C. I., 28 Venice Street, Martinborough. 5954
- ZL2LLM** Merrick, L. F., 22 Bledisloe Avenue, Nelson. 7001
- ZL2LML** Lovatt, L. M., 4 Awanui Street, New Plymouth. 4601
- ZL2LN** Davenport, N. B., Collingwood General Store, Tasman Street, P.O. Box 5, Collingwood. 7171
- ZL2LO** Kerr, C. M., 30 Wakefield Street, Wanganui. 5001
- ZL2LQ** Coote, D., 19 Corlett Road, Pimlinton. 6006
- ZL2LR** Reid, Les, 19a Roslyn Road, Napier. 4001
- ZL2LUK** Wilton, L. J., 88 Cornwall Street, Masterton. 5901
- ZL2LV** Ryan, J. F., 44 Sylvan Avenue, Waikanae. 6454
- ZL2LW** Wright, L. J., 14 Tennyson Street, Upper Hutt. 6007
- ZL2LX** Motion, R., 2a Hazel Terrace, Cherrywood, Tauranga. 3001
- ZL2LY** Wilson, D. J. W., 13 Kinross Street, Blenheim. 7301
- ZL2LZ** Rumsey, J. R., 51 Freyberg Street, Lyall Bay, Wellington. 6003
- ZL2MA** McGuire, K. J., 14 De Castro Place, Titahi Bay. 6006
- ZL2MAX** Wheatley, M. J., 28 Wills Crescent, Ashurst. 5451
- ZL2MB** Montgomerie, J. C., 11 Gardiner Place, Havelock North. 4201
- ZL2MBS** Burrell-Smith, M. L. C., 5 Kinlock Crescent, Blenheim. 7301
- ZL2MC** Waikanae District Museum Radio Club, (Trustees: ZL2DR, ZL2JG), 7a Elizabeth Street, Waikanae. 6454
- ZL2MD** Mills, C. W., 43 Great North Road, Wanganui. 5001
- ZL2ME** Sarten, D. M., 212 Coronation Avenue, New Plymouth. 4601
- ZL2MF** French, M. J., 45 St Ronans Avenue, Waterloo, Lower Hutt. 6009
- ZL2MG** Waimarino Branch NZART Inc., see Branch Directory
- ZL2MH** Neal, E. W., 116a Waerenga Road, Otaki. 6471
- ZL2MHC** Cairns, M. H., 4 Terrace Street, Aramoho, Wanganui. 5002
- ZL2MI** McCulloch, J. G., 81 Kemp Street, Kilbirnie, Wellington. 6003
- ZL2MIC** Campkin, M. I., 25 Paritutu Road, Spotswood, New Plymouth. 4601
- ZL2MIK** Osborne, M. D., 9/354 Muritai Road, Eastbourne, Wellington. 6008
- ZL2MIS** Manukorih Intermediate School, Manukorih Road, Waitara. 4656
- ZL2MJ** Perry, F. G., P.O. Box 124, Otaki. 6471
- ZL2MJB** Burge, M. J., 16 Pitama Road, Palmerston North. 5301
- ZL2MK** Puddy, R. D., 118a Hammond Road, Taradale, Napier. 4001
- ZL2ML** Castles, C. R. M., 2 Kauri Street, Gisborne. 3801
- ZL2MLS** Savage, M. L., 22 Firth Terrace, Karori, Wellington. 6005
- ZL2MM** Adcock, H. F., 78 Opaki Road, Masterton. 5901
- ZL2MMO** Prentice, S. D., 77 Inkerman Street, Renwick. 7352
- ZL2MN** Meyer, L. H., 23 Canterbury Street, Tamate, Napier. 4001
- ZL2MO** Brown, N. L., 72 Kapanui Road, Waikanae. 6454
- ZL2MOT** Moorcroft, T. K., 9 Clarence Street, Te Hapara, Gisborne. 3801
- ZL2MP** Colley, M. J., 23 Churchill Avenue, Richmond, Nelson. 7002
- ZL2MQ** Crook, D. J., 25 France Road, Napier. 4001
- ZL2MR** Ryan, M. D., 147 Mahurangi East Road, Snells Beach, Warkworth. 1240
- ZL2MRE** Potts, M. R. E., 4 Waiwera Place, New Plymouth. 4601
- ZL2MSD** Sargisson, M. D., 16 Seddon Street, Feilding. 5600
- ZL2MSF** Gulliver, C., 39 Parris Street, Waitara. 4656
- ZL2MT** Railton, G. H., 18 Old Coach Road, Johnsonville, Wellington. 6004
- ZL2MTH** Hodgkinson, M. T., 19 Thirlmere Street, Wainuiomata. 6008
- ZL2MU** Jupp, A. L., 147 Raleigh Street, R.D. 42, Waitara. 4656
- ZL2MUF** Pawson, S. R., 239 High Street, Solway, Masterton. 5901
- ZL2MUR** Lycan, M. T., c/- 128 Duncan Terrace, Wellington. 6003
- ZL2MV** Fall, D. G., 68 Brightwater Terrace, Palmerston North. 5301
- ZL2MW** Clark, M. J., 115 Maxwell Road, Blenheim. 7301
- ZL2MX** Lawn, M. E. (Mrs), 23 Hunter Street, Dannevirke. 5491
- ZL2MZ** Pool, B. L., 9 Rembrandt Avenue, Linden. 6006
- ZL2NAE** Hooper, D. R., 40 Ward Street, Te Kuiti. 2500

ZL2NAJ

ZL2NAJ Simpson-Smith, A. J., 58 Villa Street, Masterton. 5901
ZL2NAX Love, J. E., 20 Bombay Street, Aramoho, Wanganui. 5002
ZL2NB Barlow, F. E., 15 Sutherland Crescent, Melrose, Wellington. 6003
ZL2NBJ Brown, J. R., 42 Owen Street, Newtown, Wellington. 6002
ZL2NBM Barry, K. J., 3 Rondane Place, Lower Hutt. 6009
ZL2NBP Rennie, P. W. G., 64 Park Terrace, Blenheim. 7301
ZL2NBR Jamieson, A. D., 2 Waipuna Street, Blenheim. 7301
ZL2NC Lethbridge, P. J., 7 Salcombe Terrace, New Plymouth. 4601
ZL2NCW Girling, P. G., 9 Meads Place, Bulls. 5452
ZL2ND Shaw, A. J., 6 Whakarire Avenue, Westshore, Napier. 4001
ZL2NDP Page, D. P. L., 35 Ngaurimu Crescent, Napier. 4001
ZL2NE Palmer, N. D., 6 Tarata Street, Stoke, Nelson. 7001
ZL2NEK Dewar, K. D., 7 Richardson Avenue, Gisborne. 3801
ZL2NF Frazier, G. C., 14 Hinton Road, Taradale, Napier. 4001
ZL2NG Aked, M. S., 328 Rosetta Road, Raumati. 6450
ZL2NH Bayly, R. B., 91 Lytton Road, Gisborne. 3801
ZL2NI Dumbleton, G. W., 4 Stormont Place, Kingston, Wellington. 6002

ZL2NJ Tarrant, P. E., P.O. Box 55, Wanganui. 5015
ZL2NJS Sharp, W. J., Matahiwi, R.D. 8, Masterton. 5921
ZL2NK Donaldson, B. J., 69 Takutai Avenue, Bucklands Beach, Auckland. 1706

ZL2NL Clinch, V. J., 20 Scotland Street, Picton. 7372
ZL2NM Stewart, H. A. S., 41 Tautahanga Road, Turangi. 2751
ZL2NN Pye, Jamie, 33 Wyndham Road, Pinehaven, Upper Hutt. 6007

ZL2NO Grace, K. E., 9 Te Ara Road, Pukerua Bay. 6450
ZL2NP Smith, F. J. A., 21 Otatara Road, Taradale, Napier. 4001
ZL2NQ Evaroa, D. T., Appleby Road, R.D. 1, Drury, Auckland. 1750
ZL2NR Rubery, T. F., 3 McDonald Place, Marton. 5460
ZL2NRF Foster, R. A., 12 Riverbend Road, Onekawa, Napier. 4001
ZL2NS Douche, W. P., 347 Ohiro Road, Brooklyn, Wellington. 6002
ZL2NU Budd, L. A., 69 Tahuri Street, Manaia, Taranaki. 4851
ZL2NUT Davoren, Margaret, 22 Island Road, Gisborne. 3801
ZL2NV Johnston, A. F., 21 Brooklands Road, Atawhai, Nelson. 7001

ZL2NW Swarbrick, W. (Mrs), 2 Hunter Avenue, Richmond. 7002
ZL2NX Kiwi Contest Group, c/- T. J. Hogan, 19 Ruskin Road, Newlands, Wellington. 6004

ZL2NZ Milner, G. L. (Mrs), 38 Lincoln Avenue, Tawa, Wellington. 6006

ZL2OA Wairarapa Branch NZART (Inc.), see Branch Directory
ZL2OB Caldwell, W. B., 57 Pembroke Road, Stratford. 4700
ZL2OC Lambie, W. L., 12 Foster Street, Avalon, Lower Hutt. 6009
ZL2ODS Oroua Downs School, R.D. 11, Foxton. 5551
ZL2OE Logan, D. J., 270 Manly Street, Paraparaumu Beach, Paraparaumu. 6450

ZL2OF Pentelow, L. C., Kinard, R.D. 31, Opunake. 4854
ZL2OG Chisnall, R. R., 71 Lakings Road, Blenheim. 7301
ZL2OH McMillan, W. I., 67 Bluegum Road, Paraparaumu Beach. 6450

ZL2OI Leslie, Gwen, 4 Reeve Street, Foxton. 5551
ZL2OJ Sainsbury, R. P., 34 York Street, Masterton. 5901
ZL2OK Dickson, A. J., 193 Park Road, Palmerston North. 5301
ZL2OL Sigglekow, R. W., 9 Raukawa Street, Stokes Valley. 6008
ZL2OM Manning, S. C., 87a Waimea Street, New Plymouth. 4601
ZL2ON Symons, R. T., P.O. Box 9, Picton. 7372
ZL2OO Smith, A. H., Rangiotu-Rongotea Road, R.D. 7, Palmerston North. 5321

ZL2OR Osborne, D. O., 9 Greenock Place, Palmerston North. 5301
ZL2OS Lonsdale, J., 41 Maxwell Avenue, Wanganui. 5001
ZL2OV Lee, W. C., 11 Henderson Street, Karori, Wellington. 6005
ZL2OY Blackwood, R. L., 1 Hinatu Street, Linden, Wellington. 6006
ZL2OZ Taupo BBS Group, c/- 72 Hyde Avenue, Taupo. 2730
ZL2PA Leete, J. B., 8/1 Lansdowne Crescent, Masterton. 5901
ZL2PB McLaren, H. B., 10 Towai Street, Stoke, Nelson. 7001
ZL2PC Mitchell, G. W., 20 Tainui Street, Raumati Beach. 6450
ZL2PCG Goulter, P. C., 8 Murphys Road, Blenheim. 7301
ZL2PD Woodfield, A. O. J., 24 Beverley Street, Christchurch. 8001
ZL2PET Petri, A., 1a Dampier Avenue, Palmerston North. 5301
ZL2PG Laird, A. K., 24 Patrick Street, Petone. 6008
ZL2PH Hewer, B. J., 115 Omata Road, New Plymouth. 4601
ZL2PI Treleaven, A. R., 18 Trafalgar Street, New Plymouth. 4601
ZL2PJ Spellman, P. J., 36 Record Street, New Plymouth. 4601
ZL2PK King-Turner, P. R., 67 Broadway, Picton. 7372
ZL2PKJ Johnston, P. K., 33 Mowat Street, Blenheim. 7301
ZL2PL Young, C. T., 3a Princeton Road, Raumati Beach. 6450
ZL2PM Conebeer, G. B., P.O. Box 202, Wanganui. 5015
ZL2PN McKenzie, R., 1 Fair Crescent, Feilding. 5600
ZL2PP Jack, P. F. (Mrs), 160a Waikawa Road, Picton. 7372
ZL2PQ Sayer, Lynn, 49b Peach Road, Glenfield, Auckland. 1310
ZL2PR Speedy, Sue, "Woodbank", Private Bag 8081, Dannevirke. 5491

ZL2PRS Sutherland, P. R., 125 Russell Street, Gisborne. 3801
ZL2PS Petone Technical Inst. Radio Club, (Trustee ZL2AVF), Private Bag, Petone. 6340

ZL2PU Pye, J. T., 33 Wyndham Road, Pinehaven, Upper Hutt. 6007

ZL2PV Molony, M., 66 Longfellow Street, Upper Hutt. 6007
ZL2PW Smith, J. B., 331 Mangorei Road, New Plymouth. 4601
ZL2PX Taylor, M. F. W., 16 Invergorey Road, Taupo. 2730

ZL2PY Heslop, H. G., 6 Leicester Street, Stoke, Nelson. 7001
ZL2PZ Waghorn, Val, 131 North Street, Feilding. 5600
ZL2QA Kermeen, L. V., 8 Pony Lane, Spreydon, Christchurch. 8002
ZL2QB Wenzel, K. D., R.D. 1, Upper Moutere. 7152
ZL2QC Noble, W. A., 170 Te Atatu Road, Te Atatu South, Auckland. 1008

ZL2QD de la Cour, C., 20 Whaui Street, Wellington. 6002
ZL2QF Patea Branch NZART (Inc.), see Branch Directory
ZL2QG Brunton, W. R., 98 Hospital Road, Blenheim. 7301
ZL2QJ Lane, L. A., 41 Punga Street, Tangimoana. 5450
ZL2QK Kenny, E. J., 5 Townley Street, Te Hapara, Gisborne. 3801
ZL2QM Burry, J. P. P., 13 Corry Avenue, Napier. 4001
ZL2QN Burrell, G. A., 20a Tawa Terrace, Tawa. 6006
ZL2QO Atkinson, J. E. (Mrs), Cobden Road, R.D. 1, Carterton. 5951

ZL2QP Smith, Q. P. J., 7 Waddell Lane, Avondale, Christchurch. 8006

ZL2QR Abel, A. J., 20 Ranfurly Road, Feilding. 5600
ZL2QUR Tse, S. T., 167 High Street, Lower Hutt. 6009
ZL2QW Carr, Pauline, 21 Hardie Grove, Featherston. 5952
ZL2QX Robinson, D. M., 21 Blackmore Drive, Rotorua. 3201
ZL2QY Neilson, Pearl, 13 Matene Street, Otaki. 6471
ZL2QZ Wright, B. E., P.O. Box 43-100, Wainuiomata. 6340
ZL2RA Douglass, W. S., P.O. Box 4065, Kalgoolie 6430 W.A., Australia

ZL2RAC Awatapu College Radio Club, 434 Botanical Road, Palmerston North. 5301
ZL2RB Thompson, C. I. N., 19 Bideford Street, New Plymouth. 4601

ZL2RC Means, C. B., Main Road South, Waikanae. 6454
ZL2RD Wills, R. E., 30 City View Grove, Lower Hutt. 6009
ZL2RDH Harwood, R. D., 187 Matai Road, Raumati Beach. 6450
ZL2RDM Murray, R. D., 101 Frederick Street, Hastings. 4201
ZL2REX Handcock, R. A., 24 Fairfax Street, Murchison. 7191
ZL2RF Fletcher, A. E., 480 Fergusson Drive, Upper Hutt. 6007
ZL2RG Robb, P. J., P.O. Box 13-525, Onehunga, Auckland. 1132
ZL2RH Highman, R. E., 2/13c James Road, Manuwera, Auckland. 1702

ZL2RIC Coleman, Ric, 12 Grundy Street, Gisborne. 3801
ZL2RJ Hoggood, D. J., 45 Lomita Road, Johnsonville, Wellington. 6004

ZL2RK Dallas, S., 96 Te Anau Road, Wellington. 6003
ZL2RL Berg, B. L., 8 Waikare Avenue, Lower Hutt. 6009
ZL2RM Collett, G. P., 98a Braemar Road, Castor Bay, Auckland. 1309

ZL2RN Royal Naval Amateur Radio Society (NZ Branch), (Trustee: ZL2TX), 55 Kakariki Grove, Waikanae. 6454
ZL2RO Thomas, L. R., 102 Emano Street, Nelson. 7001
ZL2ROB Edwards, R. J. G., c/- Mr K.J. Bramley, 14 Rembrandt Avenue, Linden, Wellington. 6006

ZL2RON Dannatt, R., 83e Govett Avenue, New Plymouth. 4601
ZL2ROY Sefton, R. C., 45 Newcastle Street, Palmerston North. 5301
ZL2RP Leitch, A., 58b Porangahau Road, Waipukurau. 4176
ZL2RR Stewart, B. E., 1 Caversham Road, Mosston, Wanganui. 5001

ZL2RS Royal Signals Amateur Radio Society, 3 Horopito Road, Waikanae. 6454

ZL2RT Jackson, H. R., Takarei Terrace, Mokau. 4650
ZL2RU Rowe, I. S., 88 Washington Avenue, Brooklyn, Wellington. 6002

ZL2RV Wells, R. E., P.O. Box 152, Wairoa. 4192
ZL2RW White, R. S., 3/10 Wiltshire Place, Tamatea, Napier. 4001
ZL2RX Wincer, R. A., 302 Atawhai Drive, Nelson. 7001
ZL2RY Baker, P. N., 12 Shackleton Lane, Whitby, Wellington. 6006
ZL2RZ Wall, A. M., Homewood Road, R.D. 12, Masterton. 5921
ZL2SAM Ashton, S. J., 35 Momona Street, Wainuiomata. 6008
ZL2SB Petherick, E. R., 23 Anaru Street, Raumati Beach. 6450
ZL2SD White, R. L., 74 Norbiton Road, Foxton. 5551
ZL2SE De Grey, P. J., 3 Te Mit Street, Paekakariki. 6450
ZL2SF Lewis, A. W., 18 Finlay Terrace, P.O. Box 10-114, The Terrace, Wellington. 6036

ZL2SH Beale, A. L., 14 Te Oti Street, Paraparaumu Beach. 6450
ZL2SJ Norden, A. P., 14 Fernaigh Street, Papakura. 1703
ZL2SK Adamson, D. P., Old Kipps Road, R.D. 10, Palmerston North. 5321

ZL2SKB Bonnington, S. K. (Miss), Arapaepae Road, R.D. 1, Levin. 5500

ZL2SKY Chandler, A. J., 1 Huntly Street, Foxton. 5551
ZL2SM Smart, L. E., 48 Leslie Street, Waitara. 4656
ZL2SN Black, R. B., P.O. Box 2222, Stortford Lodge, Hastings. 4230

ZL2SQ McQuillan, H., Zagros Orchard, R.D. 1, Upper Moutere. 7152

ZL2SR Carran, S. R., 39 Whitaker Street, Kihikihi. 2430
ZL2SS Wallace, G. J., c/- 14 William Street, Lincoln. 8152
ZL2ST White, S. J., 19 Rossport Street, Johnsonville, Wellington. 6004

ZL2SU Harris, J. R., 21 Kokiri Crescent, Porirua, Wellington. 6006
ZL2SX Andrews, David, 66 Khandallah Road, Wellington. 6004
ZL2SZ Pye, Gael, 33 Wyndham Road, Pinehaven, Upper Hutt. 6007

ZL2TA McNearne, K. B., 8 Dunk Place, Palmerston North. 5301

ZL2TAB Hinton-Cooper, K. E., 49 Titania Street, Stratford. 4700
ZL2TAC Van Boheemen, D. J., 20 Airlie Road, Plimmerton. 6006
ZL2TAE Saywell, I. C., R.D. 3, Western Lake, Featherston. 5952
ZL2TAF Cookson, F. J., 25 Maymorn Road, Te Marua. 6007
ZL2TAG Bennett, A. J., 9 Jasper Avenue, Mt Roskill, Auckland. 1004
ZL2TAH Pope, H. N. (Mrs), 161a Scott Street, Blenheim. 7301
ZL2TAI Kingsbeer, B. H., 10 Luton Street, Palmerston North. 5301
ZL2TAJ Squires, D. R., 6 Waipounamu Drive, Lower Hutt. 6009
ZL2TAK Ingham, C. G., 138 Dowse Drive, Maungaraki, Lower Hutt. 6009
ZL2TAL Gyde, R. V., 148a Pioneer Road, New Plymouth. 4601
ZL2TAM Lam, J. C. S., 113 Warwick Road, Stratford. 4700
ZL2TAN Fairbairn, R., 49 Salisbury Road, Richmond, Nelson. 7002
ZL2TAO Johnson, T. A. D., 46 Pope Street, Camborne, Plimmerton. 6006
ZL2TAP Baker, W. R. E., 6 Nathan Street, Linden, Tawa. 6006
ZL2TAQ Hadfield, C. I., 6 Smith Street, Paekakariki. 6450
ZL2TAR Ingham, J. D., 138 Dowse Drive, Maungaraki, Lower Hutt. 6009
ZL2TAS Marsh, J. K., P.O. Box 26, Oakura. 4650
ZL2TAU Wilson, S. J., 50 Sheridan Terrace, Johnsonville, Wellington. 6004
ZL2TAW Russ, D., 153 Cracroft Street, Waitara. 4656
ZL2TAX Main, S. G., 9 Forest Park Lane, Gisborne. 3801
ZL2TAY Crook, R. J., 72 Fraser Avenue, Johnsonville, Wellington. 6004
ZL2TAZ Race, D. J. R., 20 Exeter Crescent, Pipimai, Napier. 4001
ZL2TB Linney, E., 6 Bailey Grove, Trentham, Upper Hutt. 6007
ZL2TBA Higgott, L. G., Main Road, Wharekaho Beach, Whitianga. 2856
ZL2TBB Drew, A. L. B., 2/29 Brougham Street, Nelson. 7001
ZL2TBC Neill, S. G., 6a Burleigh Road, Blenheim. 7301
ZL2TBD Malcolm, B. D., Cora Lynn Orchard, Tarrants Road, R.D. 1, Upper Moutere. 7152
ZL2TBE Simpson, K. W., 3 Milton Street, Murchison. 7191
ZL2TBF Fennessy, B. G. K., 108 Norton Road, Hastings. 4201
ZL2TBG Snelson, K. H., 26 The Anchorage, Whiti. 6006
ZL2TBH Henderson, G. J., 30 Wisteria Grove, Lower Hutt. 6009
ZL2TBI Simpson, N. M., 3 Milton Street, Murchison. 7191
ZL2TBJ Laing, B. J. S., R.D. 1, Featherston-Martinborough Road, Longridge, Featherston. 5952
ZL2TBK Love, G. A., 10 Silverstream Road, Crofton Downs, Wellington. 6004
ZL2TBL Lott, A. G., 11 Poynter Street, Blenheim. 7301
ZL2TBM Miles, B. (Mrs), 25 Fox Street, Featherston. 5952
ZL2TBN Shennan, B. V., 31 Rossiter Avenue, Lower Hutt. 6009
ZL2TBP Norgrove, A. E., 90 South Karori Road, Karori, Wellington. 6005
ZL2TBS Ward, L. A., 11 Pinny Avenue, Lower Hutt. 6009
ZL2TBT De Beun, A. J. H., 4/25 Clarence Cox Avenue, Napier. 4001
ZL2TBU Stevens, J. E. R., 48 Chesterton Street, Johnsonville, Wellington. 6004
ZL2TBX Carson, M. R., 36a Niblett Street, Wanganui. 5001
ZL2TBY Annand, R. C., 2/131 Te Mata Road, Havelock North. 4201
ZL2TBZ Milson, M. A., 1d Brora Crescent, Papakowhai, Porirua. 6006
ZL2TC Dale, K. W., 4 Foyle Street, Wellington. 6002
ZL2TCA Poulsen, J. M., 36 Marlborough Street, Feilding. 5600
ZL2TCB Dobbs, A. J., 14 Oaklands Grove, Upper Hutt. 6007
ZL2TCC Brown, G. R., 28 John Street, Stokes Valley. 6008
ZL2TCD Phillips, A. R. J., 7 Macey Crescent, Blenheim. 7301
ZL2TCE Taylor, I. L., 1 High Street, Hawera. 4800
ZL2TCG Stipkovits, S. P., 76 View Road, Houghton Bay, Wellington. 6003
ZL2TCH Henry, D. S., Hammerichs Road, R.D. 3, Blenheim. 7321
ZL2TCJ Preston, R. T., 22 Ruahine Street, Paraparaumu. 6450
ZL2TCL Lacey, J. D., P.O. Box 30-828, Lower Hutt. 6315
ZL2TCM Downs, F. W. P., 58a Chatsworth Road, Silverstream, Upper Hutt. 6007
ZL2TCN Barnhill, J. D., 26 Garfield Street, Brooklyn, Wellington. 6002
ZL2TCO Denton, S. B., 2/50b Seymour Avenue, Nelson. 7001
ZL2TCP Foley, M. J., F3/130 Holly Road, St Albans, Christchurch. 8001
ZL2TCR Wardell, M. G., 43 Rangitoto Terrace, Milford, Auckland. 1309
ZL2TCS Smith, S. D., 2/528 Ferguson Street, Palmerston North. 5301
ZL2TCT McFarlane, P. H., 4 Lambley Road, Titahi Bay, Wellington. 6006
ZL2TCU Milne, R. J., 16 Purser Grove, Lower Hutt. 6009
ZL2TCV Bennett, M. A., 95 Karaka Street, Wanganui. 5001
ZL2TCX Ireland, K. J., 14 Martin Harvey Street, Levin. 5500
ZL2TD Preston, P. J., 29 Coolidge Street, Brooklyn, Wellington. 6002
ZL2TDA Dawson, D. J., 4 Cohen Place, Milson, Palmerston North. 5301
ZL2TDB Bishop, D. J., 19 Lynda Avenue, Wellington. 6004
ZL2TDC De Grey, S. J., 9 McGuire Street, Hawera. 4800
ZL2TDD Clarke, T. R., 192 Helston Road, Paparangi, Wellington. 6004

ZL2TDF Dicker, J. L., Waimea West, R.D. Brightwater, Nelson. 7151
ZL2TDH Cathro, D. G., 36 Wingfield Place, Johnsonville, Wellington. 6004
ZL2TDI Doney, P. A., 51c Paterson Street, Aramoho, Wanganui. 5002
ZL2TDK Donald, A. J., 33b Burns Grove, Upper Hutt. 6007
ZL2TDL McNeice, A. P., P.O. Box 4164, New Plymouth. 4615
ZL2TDM McKenzie, D. J., 15 Craig Grove, Upper Hutt. 6007
ZL2TDN Therkleson, G. L., 25 Marine Drive, Sorrento Bay, Eastbourne, Wellington. 6008
ZL2TDO Hyde, P. R., 26 Randwick Crescent, Moera, Lower Hutt. 6009
ZL2TDP Charles, C. F., 87 Pasedena Crescent, Totara Park, Upper Hutt. 6007
ZL2TDQ O'Neil, M. T., 81 Dillon Street, Blenheim. 7301
ZL2TDR Gilgrist, H. T., 183 Te Moana Road, Waikanae. 6454
ZL2TDS Boyd, C. B., 110 Linton Street, Palmerston North. 5301
ZL2TDS Walker, G. J., 4/35 Green Street, Tahunanui, Nelson. 7001
ZL2TDV Grover, D., P.O. Box 26-044, Newlands, Wellington. 6030
ZL2TDX Simmons, P. R., 105 Middle Renwick Road, Blenheim. 7301
ZL2TDY Richards, J. H., 633 High Street, Lower Hutt. 6009
ZL2TE Ireson, S., 57b Sunnyvale Street, Bell Block, New Plymouth. 4601
ZL2TEG Griffin, E. A., 1010 Mona Street, Hastings. 4201
ZL2TEV Adams, S. R., P.O. Box 7469, Wellington South. 6039
ZL2TFB Cox, R. J. C., 20 Storey Avenue, Hamilton. 2001
ZL2TFC Caruthers, B. M., AG Tronics, Private Bag, New Plymouth. 4620
ZL2TFD Scott, W. M., 7 Kettle Avenue, Palmerston North. 5301
ZL2TFF Spackman, J. M. (Mrs), 4 Colquhoun Place, Hamilton. 2001
ZL2TFI Pickett, B. M., 5b Kilsyth Place, Bishopdale, Christchurch. 8005
ZL2TFN Rhodes, V. S., 46 Blagdon Road, New Plymouth. 4601
ZL2TFO Brown, E. J., 49 Karina Road, New Plymouth. 4601
ZL2TFP Blackley, L. C., 26 Kaitawa Crescent, Paraparaumu. 6450
ZL2TFR Ramsay, C. G. F. (Ms), 62 Kaikoura Street, Maupia, Wellington. 6003
ZL2TFS Sears, M. E. (Mrs), 31 Ferry Road, Spring Creek, Marlborough. 7350
ZL2TFT Stohr, F. A., 36a Pretoria Street, Lower Hutt. 6009
ZL2TFV Etheridge, P. R., 6/184 Powderham Street, New Plymouth. 4601
ZL2TFX Fox, G. J., 18 Robert Street, Newlands, Wellington. 6004
ZL2TFY Candy, D. O., Rua Maori Road, R.D. 3, Taihape. 5457
ZL2TFZ Sayer, J. B., P.O. Box 30-159, Lower Hutt. 6315
ZL2TGB Brabant, G., 7 Konini Street, Inglewood. 4651
ZL2TGD Dempsey, G., 423 Collingie Road, Hastings. 4201
ZL2TGE Campbell, Q. D., 22 Hall Crescent, Taumarunui. 2600
ZL2TGF Moore, T. E., 24 Normanby Street, Newtown, Wellington. 6002
ZL2TGH Miller, G. A., P.O. Box 13-078, Hillcrest, Hamilton. 2034
ZL2TGI Steenson, A. D., 126 Napier Road, Havelock North. 4201
ZL2TGK Jones, G. W., 10 John Guthrie Place, New Plymouth. 4601
ZL2TGL Rumsey, F. C. (Mrs), 21 Malone Road, Lower Hutt. 6009
ZL2TGM Meads, G. T., 3 Moa Street, Inglewood. 4651
ZL2TGN Berry, R. M., 27 Hikanui Drive, Havelock North. 4201
ZL2TGG Greenbank, R. J., 31 Somes Crescent, Newlands, Wellington. 6004
ZL2TGS Leckie, G. F., 31 Tarapunga Place, Tokoroa. 2392
ZL2TGT Nelson, K. D., 30 Jenkins Avenue, Redwood, Christchurch. 8005
ZL2TGU Layton, G. R., 20a Idris Road, Fendalton, Christchurch. 8005
ZL2TGV Illingsworth, R. J., 178 Main Road, Tawa. 6006
ZL2TGW Clifford, K. S., 60a Pokohiwi Road, Lower Hutt. 6009
ZL2TGX Morrison, J. F., 27 Mulgrave Street, Ashhurst. 5451
ZL2TGY Spranger, K. J., 167 Barrett Road, R.D. 4, New Plymouth. 4621
ZL2TGZ Allmand, H. M., P.O. Box 35, Te Horo. 6470
ZL2THC Dowle, G. B., P.O. Box 4127, New Plymouth East. 4615
ZL2THD Riggs, P. T., 3 Epping Grove, Karori, Wellington. 6005
ZL2THG Mackie, A. J., 8 Tarata Street, Stoke, Nelson. 7001
ZL2THI Marshall, D. W., P.O. Box 100, Patea. 5181
ZL2THJ Gill, T. B., 69 Cambria Street, Nelson. 7001
ZL2THM Hopkins, M. D., 6 Tedder Way, Karori, Wellington. 6005
ZL2THP Dewsnap, A. V., 30 Ruru Crescent, Heretaunga, Upper Hutt. 6007
ZL2THQ Newlands, R. G., 14 Vasant Avenue, Ngaio, Wellington. 6004
ZL2THR Watson, R. H., 44 Orr Crescent, Lower Hutt. 6009
ZL2THV Neill, W. J., 3a Wattle Grove, Maungaraki, Lower Hutt. 6009
ZL2THW Muir, A. W., Ridvan Gardens, 7 Ridvan Grove, Khandallah, Wellington. 6004
ZL2THX Blanchard, D. C., 469a Egmont Road, R.D. 2, New Plymouth. 4621
ZL2THY McCarthy, W. S., 26 Bangor Avenue, Flaxmere, Hastings. 4201
ZL2TI Conner, D. P., 40 Marewa Road, Hataitai, Wellington. 6003
ZL2TIA Clough, D. H., 3 Argyle Place, New Plymouth. 4601
ZL2TIE Guilford, A. E., 27 Rose Road, Grey Lynn, Auckland. 1002
ZL2TIF Johnson, A. F. W., 43 Elizabeth Street, Blenheim. 7301

ZL2TIG

ZL2TIG Douglas, A. W. J., 20 Stanhope Grove, Korokoro, Eastern Hutt. 6008

ZL2TIJ Wong, A. G., P.O. Box 17-392, Karori, Wellington. 6033

ZL2TIK Buchanan, I. A., Motuopara, R.D. 2, Turangi. 2751

ZL2TIL Maxwell, D. M., 7 Plunket Avenue, Petone. 6008

ZL2TIM Lumsden, K. M., 19 Taonui Street, Papakura. 1703

ZL2TIO Barnes, P. E., 54 Brooker Grove, Newlands, Wellington. 6004

ZL2TIQ Brieseman, P. J., 12 Franklyn Road, Tawa. 6006

ZL2TIS Stewart, I., 5 Pownell Street, Masterton. 5901

ZL2TIT Taylor, A. F., 16 Washington Terrace, Nelson. 7001

ZL2TIW Anderson, A. E., 76 Skibo Street, Dunedin. 9001

ZL2TIX Smith, T. R., 31 Bird Grove, Stokes Valley. 6008

ZL2TIY Harmsworth, J. (Mrs), Jonkers Road, Waitakere, Auckland. 1250

ZL2TJ Torley, J. D., 83 The Esplanade, Westshore, Napier. 4001

ZL2TJA Walker, A. L., Flat 3, 216 Annesbrook Drive, Nelson. 7001

ZL2TJC Wakely, B., 1/3 The Ridgeway, Stoke, Nelson. 7001

ZL2TJD Dames, J. H., 212 Norton Road, Hastings. 4201

ZL2TJG Laing, I. J. (Mrs), "Longridge", Kaiwairi, R.D. 1, Featherston. 5952

ZL2TJH Whittington, A. N., 2 Caroline Drive, Feilding. 5600

ZL2TJI Bould, R. M., 97 Ohariu Road, Wellington. 6004

ZL2TJJ Hannon, G. J., 600 Massey Street, Hastings. 4201

ZL2TJL Thompson, R. E., 25 Findlay Street, New Plymouth. 4601

ZL2TJM Baker, R. E., 18a King Street, Feilding. 5600

ZL2TJN Cristensen, T. G., 36 Surrey Street, Taradale, Napier. 4001

ZL2TJO Brice, D., 43 Fairview Avenue, Feilding. 5600

ZL2TJP Bryant, P., 62 Clarence Street, Vogeltown, Wellington. 6002

ZL2TJR Rooney, J. M., 119 Arawhata Road, Paraparaumu. 6450

ZL2TJS Strachan, J. A. M., 41 Glen Road, Kelburn, Wellington. 6005

ZL2TJT Schmidt, J. T., 9 Ponderosa Grove, Maoribank, Upper Hutt. 6007

ZL2TJW Wakefield, M. J., 70 Taita Drive, Lower Hutt. 6008

ZL2TJX Evans, E. T., 16 Davidson Avenue, Napier. 4001

ZL2TK Garing, T. R., 7/35 Ganges Road, Khandallah, Wellington. 6004

ZL2TKA Rickards, C. M., 21a Longview Drive, New Plymouth. 4601

ZL2TKB Knight, K. J., 99 Chamberlain Street, Tahunanui, Nelson. 7001

ZL2TKE McLean, W. P., 44a Ranui Road, Remuera, Auckland. 1005

ZL2TKG Wright, M. A., 28 Cunliffe Street, Johnsonville, Wellington. 6004

ZL2TKH Hodges, K. J., 157 Totara Drive, Pukete, Hamilton. 2001

ZL2TKI Sanson, I. M., see ZL7TKI.

ZL2TKJ Harmsworth, A. G., Jonkers Road, Waitakere, Auckland. 1250

ZL2TKL Thornton, W. H., R.D. 2, Homewood Road, Otane. 4170

ZL2TKM McRoberts, K., 49 Arrow Street, Nelson. 7001

ZL2TKN Rowe, C. G., 20 Kingsbury Avenue, Rangiora. 8254

ZL2TKP Fleming, A. J., 268 Courtenay Street, New Plymouth. 4601

ZL2TKS Smith, K. G., c/- Westshore Motor Camp, Napier. 4001

ZL2TKV Burns, F. N. R., 1010 Waipuna Street, Hastings. 4201

ZL2TKW Butt, A. J., 26 Horsey Road, Melrose, Wellington. 6003

ZL2TKY Pattle, K. A., 10 Woodstock Terrace, Tawa. 6006

ZL2TL Wright, H. A. L., 130 Pukepapa Road, Marton. 5460

ZL2TLB Biller, J. S., 25 Kaitangata Crescent, Kelston, Lower Hutt. 6009

ZL2TLC Ward, C. A. (Ms), 73 Stansburg Street, Martinborough. 5954

ZL2TLD McAllister, G. B., 9 Tennyson Street, Upper Hutt. 6007

ZL2TLE Ramsay, K. J., 62 Kaikoura Street, Maupuia, Wellington. 6003

ZL2TLF Sargent, D. J., 9 Ngahere Street, Inglewood. 4651

ZL2TLH Barber, M. B., 136 Mark Avenue, Grenada Village, Wellington. 6004

ZL2TLJ Jones, B. L., 11 Turville Crescent, Newlands, Wellington. 6004

ZL2TLK Roberts, L. S. (Mrs), 188 Nikau Street, Hastings. 4201

ZL2TLL Wallace, D. P., 149 Orangi Kaupapa Road, Wellington. 6005

ZL2TLM Fowles, G. F., 78 Thurlough Grove, Karori, Wellington. 6005

ZL2TLN Nicholson, C. L., 1b/186 The Terrace, Wellington. 6001

ZL2TLQ Baker, I. H., 42b Waihi Road, Hawera. 4800

ZL2TLR Smith, B. W., 261a Riverside Drive, Lower Hutt. 6009

ZL2TLS Prout, S. A., 23 Roy Terrace, New Plymouth. 4601

ZL2TLT Riches, P. C., 28 Devon Street, Kelburn, P.O. Box 27-202, Wellington. 6037

ZL2TLV Dickson, M. P., Okoki Road, R.D. 45, Urenui. 4655

ZL2TLW Gifford-Moore, R. J., 2 Kaimera Court, 44a East Street, Feilding. 5600

ZL2TLY Gunn, J. A., P.O. Box 109, Hawera. 4800

ZL2TM Edwards, Ross, 4 Lewis Street, Gisborne. 3801

ZL2TMA Hughes, D. C., R.D. 17, Waitotara, Wanganui. 5180

ZL2TMB Beer, M. C. E., 109-111 Bridge Street, Bulls. 5452

ZL2TMC Savory, M. O., 17 Zetland Street, Highbury, Wellington. 6005

ZL2TMD Charlton, G. H., 136 John F Kennedy Drive, Palmerston North. 5301

ZL2TME Jones, S. E., 42 Brougham Street, Nelson. 7001

ZL2TMG Gore, M. C., 1 Hulme Street, Palmerston North. 5301

ZL2TMI Lill, V. E., R.D. 1, Porourua. 6006

ZL2TMJ Major, G. M., 7 Colonial Drive, Palmerston North. 5301

ZL2TMK Kovaleski, T., 28 Koromiko Street, Inglewood. 4651

ZL2TMM Green, J. W., 40 Bancroft Terrace, Newlands, Wellington. 6004

ZL2TMQ Stewart, I. L., c/- Police Station, P.O. Box 1040, Whangarei. 0115

ZL2TMR Norling, R. W., 94 Miro Street, Ohakune. 5461

ZL2TMS Pallesen, P. A., 808 North Riverslea Road, Hastings. 4201

ZL2TMU McGhie, R. C., 8 Kashmir Avenue, Upper Hutt. 6007

ZL2TMV McAuliffe, P. N. G., 5 Takahe Place, Tokoroa. 2392

ZL2TMW Wright, T. M., 3 Adventure Drive, Whitty. 6006

ZL2TMX Smith, C. F., 6 Rimu Place, Taradale, Napier. 4001

ZL2TMY Hannan, P. E., "Tironui", R.D. 1, Martinborough. 5954

ZL2TMZ Woodfield, N. C., Ruapehu Alpine Lifts Ltd, Private Bag, Mt Ruapehu. 2650

ZL2TN Brighting, T. L., 18 Ashford Avenue, Palmerston North. 5301

ZL2TNB Langford, K. H., 46 East Street, Greytown. 5953

ZL2TND Beeston, S., 39 Southgate Road, Island Bay, Wellington. 6002

ZL2TNF Clarkson, K. G., c/- Post Office, Ruakawakawa, Clevedon. 1750

ZL2TNG Gibbons, N. M., 116 Wyndham Road, Silverstream, Upper Hutt. 6007

ZL2TNH Bell, D. R., P.O. Box 40-494, Upper Hutt. 6415

ZL2TNI Sutton, T. D., 17 Tory Street, Nelson. 7001

ZL2TNJ Crook, C. M. (Mrs), 72 Fraser Avenue, Johnsonville, Wellington. 6004

ZL2TNK Dannatt, M. E., 41 Spencer Street, Crofton Downs, Wellington. 6004

ZL2TNL Shearer, D. B., 10 Sewell Place, Cambridge. 2351

ZL2TNM Stokes, D. C., 2/185 Cecil Road, Wadestown, Wellington. 6001

ZL2TNN Dobson, H. M., 6 Haronga Road, Gisborne. 3801

ZL2TNP McLachlan, I. M., 38 Ranfurly Street, Gisborne. 3801

ZL2TNQ Plowman, T. S., 141 Thompson Road, Napier. 4001

ZL2TNS Huttley, J. D., 20 Aquarius Avenue, Glen Eden, Auckland. 1007

ZL2TNT Scott, G. W., R.D. 4, Palmerston North. 5321

ZL2TNU Devon, D. R., 81 Greta Street, Oamaru. 8901

ZL2TNW Earl, T. H., 148 Kelburn Parade, Wellington. 6005

ZL2TNX Brown, K. J., 1a Limmer Place, Browns Bay, Auckland. 1310

ZL2TO Waitara Branch NZART, see Branch Directory

ZL2TOB Loeffelhechner, E., 6 Cunliffe Street, Johnsonville, Wellington. 6004

ZL2TOC Atkins, P. D., 18 Apu Crescent, Lyall Bay, Wellington. 6003

ZL2TOD Robinson, M. G., 5 Mars Avenue, Sandringham, Auckland. 1003

ZL2TOE Graham, P. R., 23 Woodville Street, St Albans, Christchurch. 8001

ZL2TOF Vincent, P. C., 7 Pharazyn Street, Feilding. 5600

ZL2TOG De Grey, A. B., 105 Clemow Road, New Plymouth. 4601

ZL2TOH Fulton, J. E. R., 22a Trellissick Crescent, Ngāio, Wellington. 6004

ZL2TOI Nicholls, S. P., 43 Farraday Street, Napier. 4001

ZL2TOK Waldron, D. M., 27 Bodmin Terrace, Cambourne, Wellington. 6006

ZL2TOL Buchanan, G. C., 17 Humphries Place, Palmerston North. 5301

ZL2TOP Coley, N., 84 Main Road, Wainuiomata. 6008

ZL2TOQ Davson, B. E. (Mrs), 115 Fitzherbert Street, Featherston. 5952

ZL2TOR Woods, D. J., R.D. 5, Ngāio Road, Feilding. 5600

ZL2TOS Anderson, K. J., 215 Stokes Valley Road, Stokes Valley. 6008

ZL2TOU Brunton, R. G., 19 Gladstone Street, Woodville. 5473

ZL2TOZ O'Donnell, M. J., 9 Coles Crescent, Papakura. 1703

ZL2TPA Robbie, D. R., 2 Waimarie Park, Levin. 5500

ZL2TPB Cushen, T. M., 52 Pacific Parade, Army Bay, Whangaparaoa. 1463

ZL2TPD Tingey, S. A., P.O. Box 11-477, Manners Street, Wellington. 6034

ZL2TPE Clarke, G. E. (Mrs), 57 Kauri Street, Miramar, Wellington. 6003

ZL2TPF Manley, P. F., 6 Sunshine Avenue, Paraparaumu. 6450

ZL2TPG Gilbert, S. A., 1 King Street, Napier. 4001

ZL2TPH Hellberg, Mrs Penny, 96 Kelvin Grove Road, Palmerston North. 5301

ZL2TPJ Jardine, B. J., Ashurst Bunnythorpe Road, R.D. 10, Palmerston North. 5321

ZL2TPL Laing, P. D., 6 McDonald Street, Taita, Lower Hutt. 6009

ZL2TPO Jackson, C. D., Surrey Satellite Technology Ltd, University of Surrey, Guildford, England GU2 5XH

ZL2TPP Caldwell, J. D., 36 Rangiora Terrace, Nelson. 7001

ZL2TPQ Browning, K. F., 56 Cole Street, Dannevirke. 5491

ZL2TPS Purdie, B. E., 65 Hedges Street, Sanson. 5450

ZL2TPT Harris, H. B., "Mt Adde", R.D. 4, Blenheim. 7321

ZL2TPW Annett, D. A., 1/26 Tennyson Avenue, Takapuna, Auckland. 1309

ZL2TPX Hopkins, C., 7e Roberts Street, Linden. 6006

ZL2TPY Mundell, K. W., 6 Alberta Road, New Plymouth. 4601

ZL2TPZ Martin, R. J., 10 Godley Street, Waterloo, Lower Hutt. 6009
ZL2TQ Jensen, R. T., 33 Iona Road, Havelock North. 4201
ZL2TQA Nixon, P. J., 14 Huia Road, Days Bay, Eastbourne. 6008
ZL2TQD Fulton, H. R., 13 Staysail Place, Whitby, Paremata. 6006
ZL2TQF Edridge, S. R., 5 Warwick Avenue, Hamilton. 2001
ZL2TQI Tucker, N. R. A., 17 Sefton Street, Havelock North. 4201
ZL2TQK Maxwell, C. H., 8 Martin Grove, Lower Hutt. 6009
ZL2TQL Holdaway, R. J., 21 Richardson Avenue, Blenheim. 7301
ZL2TQM Challis, D. J., 45 Berkeley Road, Wainuiomata, Wellington. 6008
ZL2TQP Quinn, C. J., 29 Dominion Park Road, Johnsonville, Wellington. 6004
ZL2TQQ Hill, H. R., 3a Balliol Drive, Tawa. 6006
ZL2TQV Barnett, A. D., 4b Kashmir Road, Glen Eden, Auckland. 1007
ZL2TQY Hood, R., 24 Seddon Street, Palmerston North. 5301
ZL2TR Dallimore, S. C., 26 Marybank Road, Atawhai, Nelson. 7001
ZL2TRC Barth, M. J., 45 Flockton Street, St Albans, Christchurch. 8001
ZL2TRE Jennings, S. B., 66 Pine Avenue, Upper Hutt. 6007
ZL2TRH Darby, P. R., 25 South Road, New Plymouth. 4601
ZL2TRI Harper, E. J., 233 The Esplanade, Petone. 6008
ZL2TRJ Nicoll, R. J., 22 Bythell Street, Blenheim. 7301
ZL2TRL Jarvis, M. D., 130 Kelvin Grove Road, Palmerston North. 5301
ZL2TRM MacKenzie, H. R., 23 Balgownie Avenue, Wanganui. 5001
ZL2TRO Campbell, J. D. Mc., 38a Chelmsford Street, Ngaio, Wellington. 6004
ZL2TRP Pyne, R. E., 12 Tweed Road, Papakowhai, Paremata. 6006
ZL2TRQ McKenzie, N. A., 1 Colenso Avenue, Napier. 4001
ZL2TRR Cameron, H. K., 6 Somerset Grove, Waitare Beach. 5500
ZL2TRS Jamieson, P. A., 222 Kennedy Road, Napier. 4001
ZL2TRV Yaldwyn, J. S. C., 107 Kanpur Road, Broadmeadows, Wellington. 6004
ZL2TRW Richards, D. C., P.O. Box 58-751, Greenmount, Auckland. 1730
ZL2TRY Stewart, A. H., P.O. Box 3, Bulls. 5452
ZL2TRZ Tonkin, J. R., 15 Ahuriri Street, Strathmore Park, Wellington. 6003
ZL2TSA Bold, M. R., 162 West Street, Feilding. 5600
ZL2TSB Mills, G. R. A., 2 Selwyn Street, Levin. 5500
ZL2TSC Craig, S. G., 12 Exploration Way, Whitby, Porirua. 6006
ZL2TSD Keen, N. K. M., P.O. Box 484, Whakatane. 3080
ZL2TSE Thompson, A. B. J., 104 Innes Road, Christchurch. 8005
ZL2TSF Chisholm, W. J. R., 13/131 Coromandel Street, Newtown, Wellington. 6002
ZL2TSG Brader, J. M., 22 Mawson Street, Waiwhetu, Lower Hutt. 6009
ZL2TSH Codd, B. A., 20b Norman Street, New Plymouth. 4601
ZL2TSI Allison, D. N., 49 Oregon Drive, Queenstown, Postal: P.O. Box 1066, Queenstown. 9197
ZL2TSJ Jardine, Shirley, Ashhurst Bunynthorpe Road, R.D. 10, Palmerston North. 5321
ZL2TSK Millard, G., 30 Akatarawa Road, Upper Hutt. 6007
ZL2TSL Laybourn, B. J., 146 Pembroke Road, Wellington. 6005
ZL2TSM Brown-Douglas, F. A., P.O. Box 10-133, The Terrace, Wellington. 6036
ZL2TSN Parker, G. T., 2/46 Highland Park Drive, Howick. 1705
ZL2TSO Osborne, S. J., 14 Abbots Avenue, Waipawa. 4170
ZL2TSP Salt, B. R., 514a Fenwick Street, Hastings. 4201
ZL2TSR Meharry, A. G., 18 Puriri Street, Te Aroha. 2971
ZL2TSS Tse, A. E., 2-16 Warren Avenue, Three Kings, Auckland. 1004
ZL2TST Bernon, B. A., 7 Spur Grove, Titahi Bay. 6006
ZL2TSU Bristow, E. J., 77 Thatcher Street, Wanganui. 5001
ZL2TSY Wilson, K. J. (Miss), 13 Kinross Street, Blenheim. 7301
ZL2TT Willis, R. E., 11 Bushey Way, Maungaraki, Lower Hutt. 6008
ZL2TTA McNeill, I. J., 111 Norana Road, Upper Hutt. 6007
ZL2TTC Adamson, F. R., 16 Naughton Terrace, Kilbirnie, Wellington. 6003
ZL2TTE Crampton, J. F., 40 Rogers Street, Blenheim. 7301
ZL2TTF Christianson, N. J., 8 Rankin Street, Wadestown, Wellington. 6001
ZL2TTJ Johnston, K. A., 21 Madras Street, Khandallah, Wellington. 6004
ZL2TTK Gridley, N. J., 11 Humphries Street, Greytown. 5953
ZL2TTL Watkins, K. R., 19a Carthew Street, Okato. 4652
ZL2TTN Speight, L. G., 22 Shackleton Street, Maraenui, Napier. 4001
ZL2TTO Ede, A. R., 126 Epuni Street, Lower Hutt. 6009
ZL2TTQ Clark, L. K., Roberts Line, R.D. 8, Palmerston North. 5321
ZL2TTS Jansen, C. T. F., 10 Karepa Street, Brooklyn West, Wellington. 6002
ZL2TTW Campion, S. G., 17 The Crows Nest, Whitby. 6006
ZL2TTX Walker, R. S., 9 Milne Terrace, Island Bay, Wellington. 6002
ZL2TTY Boyce, M. L. P., P.O. Box 4170, Palmerston North. 5315
ZL2TTZ McDermid, G. V., P.O. Box 4408, Hamilton East. 2032
ZL2TU Adin, B. E., 18 Duke Street, Levin. 5500
ZL2TUC Forrest, I. E., 41 Norfolk Crescent, Feilding. 5600
ZL2TUD Futter, R. J., P.O. Box 38-662, Wellington Mail Service Centre. 6332

ZL2TUE Wall, R. J., P.O. Box 451, Gisborne. 3815
ZL2TUF Hastie, L. M., Koputara Road, Himatangi Beach, R.D. 11, Foxton. 5551
ZL2TUI Bergen, E. A., 4 Armagh Terrace, Marton. 5460
ZL2TUJ Bulleid, J. L., 65a Kidson Terrace, Cashmere, Christchurch. 8002
ZL2TUO Davies, J. R., P.O. Box 238, New Plymouth. 4615
ZL2TUP Cullen, E. R., 9 Ian Sage Avenue, Torbay, Auckland. 1310
ZL2TUQ Cuttriss, H. N., 75a Tiber Street, Wellington. 6002
ZL2TUR Banks, M., 66 Cumberland Street, New Plymouth. 4601
ZL2TUS Kirkness, M. A., 54 Rimu Street, Wanganui. 5001
ZL2TUT McPherson, D. B., 21 Hunia Street, Marton. 5460
ZL2TUU Davis, R. W., 10 Maire Street, Otaki. 6471
ZL2TUV Jepson, S. J., Forest Lakes Road, R.D., Otaki. 6471
ZL2TUW Humphreys, E. M., 16 Fergusson Street, Stoke, Nelson. 7001
ZL2TUX Breen, J. P., 38b Blue Mountains Road, Pinehaven, Upper Hutt. 6007
ZL2TUY Prankerd, D. G., Takapu Road, Johnsonville, Wellington. 6004
ZL2TV Boyer, J. P., 32 Beachville Crescent, Nelson. 7001
ZL2TVA Burney, G. L., 123a Knights Road, Lower Hutt. 6009
ZL2TVB Seed, B. V., Peka Peka Road, R.D., Waikanae. 6454
ZL2TVC Gowan, A. J., 9 Christian Street, Dannevirke. 5491
ZL2TVG Buck, G. K., 96 Cleghorn Street, Blenheim. 7301
ZL2TVJ Bodley, R. A., P.O. Box 7469, Wellington South. 6039
ZL2TVK Hill, K. M. (Miss), 29 Holdsworth Avenue, Upper Hutt. 6007
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ZL2UVU Glassey, S., 401 Featherston Street, Palmerston North. 5301
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ZL2UWI Fluerty, R. M., 24 The Sounding, Whitby, Wellington. 6006
ZL2UWJ Jacobsen, W. J., 10 Empire Street, Dannevirke. 5491
ZL2UWQ Storey, S. A., 4 Thomas Hook Street, Linden. 6006
ZL2UWY Laybourn, R. A., 146 Pembroke Road, Northland, Wellington. 6005
ZL2UWZ Norman, A. J., The Avenue, Levin. 5500
ZL2UX MacDonald, J. R., 39 Aniseed Grove, Upper Hutt. 6007
ZL2UXQ Payne, M. B., 144a Ngamotu Road, New Plymouth. 4601
ZL2UYG Hand, G., 52 McKillop Street, Porirua. 6006
ZL2UYH Gusscott, N. T., 4 Penrose Street, Lower Hutt. 6009
ZL2UZ Spotswood College, c/- Trustee B P Finch ZL2BBN, P.O. Box 6116, New Plymouth. 4630
ZL2UZG Wood, L. R. L., 118 Browne Street, Waitara. 4656
ZL2UZQ Allen, A. J., 8 Shaftesbury Grove, Stokes Valley. 6008
ZL2UZY Eustace, R. W., 19 Rapaki Street, R.D. 11, Turakina Beach. 5152
ZL2VA Vaughan, D. L., 70 Glen Road, Raumati South. 6450
ZL2VAF Newson, J. R., 424 Huia Street, Hastings. 4201
ZL2VAH White, G., 807 Kowhai Street, Hastings. 4201
ZL2VAL Leech, A., 1/50 Queens Road, New Plymouth. 4601
ZL2VAR Anderson, G. A., 30 Titoki Street, Masterton. 5901
ZL2VAS Kessel, D. A., 115 Amberley Avenue, Palmerston North. 5301
ZL2VAU Hellberg, D. J., 96 Kelvin Grove Road, Palmerston North. 5301
ZL2VAV Hawtree, N. R., 50 Fox Road, Wanganui. 5001
ZL2VAX Fleming, P. A., Riverland Farm, R.D. 2, Pahiatua. 5470
ZL2VAY Carss, Debbie, 18 Birch Place, Aramoho, Wanganui. 5002
ZL2VB Browne, A. H., 98 Renown Road, Raumati South. 6450
ZL2VBC Rosewarne, C. C., 83 Manawapou Road, Hawera. 4800
ZL2VBF Cattermole, G. R., 15 York Street, Motueka. 7161
ZL2VBG Crudge, M. R., 94 King Edward Street, Motueka. 7161
ZL2VBI Allan, G. (Mrs), 20a Courtney Street, Motueka. 7161
ZL2VBJ Bromley, S. J. (Mrs), 9 Archer Place, Carters Beach, Westport. 7621
ZL2VBK Rozee, F. P., 53 Dillon Street, Blenheim. 7301
ZL2VBL Packer, D. W., 12 James Place, Richmond. 7002
ZL2VBM Mattsen, Raewyn, 422 High Street, Motueka. 7161
ZL2VBO Goodger, G. W., 5 Dodson Road, Takaka. 7172
ZL2VBR Benton, B. T., 15 Pararewa Drive, New Plymouth. 4601
ZL2VBT Kemsley, T. R., 100 Pittcairn Street, Oakura. 4650
ZL2VBT van Beek, Guy, 16 Norwich Place, Palmerston North. 5301
ZL2VBX Smilie, M. J., 7b Cannon Street, New Plymouth. 4601

ZL2VCA

ZL2VCA Palmer, D. G., 4 Tuckett Place, Wakatu, Nelson. 7001
ZL2VCB Jones, W. T., 92 Rangiora Avenue, Palmerston North. 5301
ZL2VCC Wheatley, Cheryl, 28 Wills Crescent, Ashhurst. 5451
ZL2VCG Griffiths, C. L., c/- PDC Urenui, Main North Road, Urenui. 4655
ZL2VCH Herbert, C. A. (Mrs), Mataro Road, R.D. 45, Urenui. 4655
ZL2VCI Pegg, A. J. (Mrs), 115c Muritai Street, Tahunanui, Nelson. 7001
ZL2VCL Lines, C., 106 South Road, New Plymouth. 4601
ZL2VCS Saunders, C. J. (Mrs), 127 Long Melford Road, Palmerston North. 5301
ZL2VDB Bolt, D. R., 29 Stillwater Place, Palmerston North. 5301
ZL2VE Hansen, G. H., 9 Sanders Avenue, Napier. 4001
ZL2VFS Smith, F., 3 Wilson Street, Pahiatua. 5470
ZL2VGB McAnulty, G. B., 35 Daniell Street, Masterton. 5901
ZL2VGC Campbell, G. C., 46 Michael Street, Masterton. 5901
ZL2VGL Lane, G. W., P.O. Box 50-289, Porirua. 6215
ZL2VH Upper Hutt Branch NZART (Inc.), see Branch Directory
ZL2VI Manning, E. E., 33 Tiverton Crescent, New Plymouth. 4601
ZL2VIN Quantic, K. L. P., 3/56a Michaels Avenue, Ellerslie, Auckland. 1005
ZL2VJ Jones, Vivienne, 10 John Guthrie Place, New Plymouth. 4601
ZL2VJB Gosnell, J. B., 10 Eton Place, Palmerston North. 5301
ZL2VJD Good, J. M., 28 Matipo Terrace, Nelson. 7001
ZL2VJR Rhodes, J. M., 54 Kempton Street, Greytown. 5953
ZL2VJS Sefton, J. (Mrs), 45 Newcastle Street, Palmerston North. 5301
ZL2VJV Wallace, J. J., 18 Cobden Road, Napier. 4001
ZL2VK Wallace, I. R., 22 Parson Street, Wanganui. 5001
ZL2VKD Allen, J. G., 95 Manuka Street, Wanganui. 5001
ZL2VKE Pomana, S. M., P.O. Box 80, Pongaroa. 5470
ZL2VL Gloag, G. F., 12 Hillcrest Drive, Palmerston North. 5301
ZL2VLA Nixon, P. A., 194 Frankley Road, New Plymouth. 4601
ZL2VLB Bennett, Lance, 31 Miro Street, Inglewood. 4651
ZL2VLW Wotton, L. J., 10 Bath Street, Eitham. 4657
ZL2VM Bull, M. B., 51 Liverpool Crescent, Napier. 4001
ZL2VMB McNabb, B. V., 6 Cumbria Lane, Westmorland, Christchurch. 8002
ZL2VME Cockroft, D. A., 84 Wyndham Avenue, Pinehaven, Upper Hutt. 6007
ZL2VMG Geremia, M. R., 10 Waterhouse Street, Masterton. 5901
ZL2VMH Hout, M. R., 4 Bancroft Terrace, Newlands, Wellington. 6004
ZL2VMJ Johns, M. F., 16 Cannon Street, New Plymouth. 4601
ZL2VMS Stewart, Marie, P.O. Box 3, Bulls. 5452
ZL2VN Gaudin, W. G., 18 Trafalgar Street, New Plymouth. 4601
ZL2VO Hayman, G. C., 73 Makora Road, Masterton. 5901
ZL2VP Cheshire, A. H., 5 Seddon Street, Upper Hutt. 6007
ZL2VPA Arnold, P. M., P.O. Box 38-360, Wellington. 6332
ZL2VPH Harvey, P. N., 129 Cracroft Street, Waitara. 4656
ZL2VPP Humphrey, P. N., 31a Kippenberger Street, Masterton. 5901
ZL2VPT Tunncliffe, P. C., 15 Carmen Terrace, Snells Beach, Warkworth. 1240
ZL2VQ Gaudin, Carol, 18 Trafalgar Street, New Plymouth. 4601
ZL2VRJ Johnson, R. A., 6 Dalrymple Place, Marton. 5460
ZL2VS Miller, Dusty, 41 Alexandra Street, Marton. 5460
ZL2VSA Schmidt, B. J. (Mrs), 19 Windsor Terrace, Feilding. 5600
ZL2VSG Gaudin, S. L., 18 Trafalgar Street, New Plymouth. 4601
ZL2VSJ Schmidt, S. J., 28 Church Street, Feilding. 5600
ZL2VSK Adamson, R. D., Old Kips Road, R.D. 10, Palmerston North. 5321
ZL2VSL Lawn, S. A., 301 Kimbolton Road, Feilding. 5600
ZL2VSM McAnulty, S. M., 35 Daniell Street, Masterton. 5901
ZL2VSP Prakash, S., 23 Tamahine Street, Miramar, Wellington. 6003
ZL2VT Arthur, A. J. M. (Mrs), 51 Maraetai Heights Road, Maraetai. 1705
ZL2VTS Senior, T. D., 5 Brixham Place, New Plymouth. 4601
ZL2VUW Stevens, K. F., 6 Manitoba Place, Kingston, Wellington. 6002
ZL2VV Carter, L. J., 13 Waterview Road, Devonport, Auckland. 1309
ZL2VVM Monk, V. B., Kapua Farm, R.D. 1, Featherston. 5952
ZL2VW Gray, O. T., 16 Gonville Avenue, Wanganui. 5001
ZL2VX Dickson, S., 67 Mills Road, Mornington, Wellington. 6002

ZL2VY

ZL2WA Klein, B. J., 49 Milne Crescent, Taitea, Lower Hutt. 6009
ZL2WAC Wellington VHF Group, see Branch Directory
ZL2WAG Purcell, C. R., P.O. Box 31-312, Lower Hutt. 6315
ZL2WAG Ragan, G. S., 32 Mitchell Street, Wanganui. 5001
ZL2WAL Wallace, R. G., 149 Orangi Kaupapa Road, Northland, Wellington. 6005
ZL2WAS Kirk, G. A., 92 Somerset Road, Wanganui. 5001
ZL2WAW Cooper, S. R., 24 York Street, Dannevirke. 5491
ZL2WAX Campbell, W. M., c/- Penberthy, R.D. 5, Rangitiki Lane, Palmerston North. 5321
ZL2WAZ Watkins, A. L., 46 Strand Crescent, Lower Hutt. 6009
ZL2WB Wellington Branch NZART (Inc.), see Branch Directory
ZL2WBA Angland, B. J., 24 Pitama Road, Palmerston North. 5301
ZL2WBH Hey, B. F., 8 Carverthen Street, Masterton. 5901
ZL2WBW Watt, B. J., 21 South Belt, Masterton. 5901
ZL2WC Crabtree, W. D., P.O. Box 87, Napier. 4015
ZL2WCL Lee, C., 3 Forsyth Street, Napier. 4001
ZL2WD Deller, F. J. G., 3/29 Ward Street, Upper Hutt. 6007
ZL2WDB Bacon, D. F., 24 Opawa Road, Palmerston North. 5301
ZL2WDC Callander, D. J., 23 Longcroft Terrace, Wellington. 6004
ZL2WE Stead, June, 502a Charles Street, Hastings. 4201
ZL2WF Wensley, N. L., 29 Cawtron Crescent, Nelson. 7001
ZL2WG Waghorn, E. D., 131 North Street, Feilding. 5600
ZL2WH Hewer, Gloria, 115 Omata Road, New Plymouth. 4601
ZL2WGH McAuley, A. W., 151 Townsend Road, Miramar, Wellington. 6003
ZL2WHO Kennard, M. A., 69 Fitzroy Street, Palmerston North. 5301
ZL2WI Wilkinson, J. G., 70 Queens Road, Waikanae Beach. 6454
ZL2WIN Lawn, L. J. (Mrs), 301 Kimbolton Road, Feilding. 5600
ZL2WIP Perrett, I. G., 9 Totara Crescent, Hawera. 4800
ZL2WIT Johnston, M. D., 188 N High Street, Carterton. 5951
ZL2WJ Ross, J. B., 16 Moncrieff Avenue, Tahunanui, Nelson. 7001
ZL2WJM Mulholland, M. J., 251 Princes Street, Hawera. 4800
ZL2WJP Palmer, J. M., 45 Glanmire Road, Newlands, Wellington. 6004
ZL2WJT Taylor, J. G., 20 Grenville Street, New Plymouth. 4601
ZL2WJJ Watt, J. J., 19 Chamberlain Road, Masterton. 5901
ZL2WJM Jackson, M. M., 78 Renall Street, Masterton. 5901
ZL2WMM Mulholland, M. J., 22b High Street, Eitham. 4657
ZL2WN Guppy, R. P., 6 Mascot Street, Tawa, Wellington. 6006
ZL2WNB Barry, N. W., 20 Gladstone Street, Hawera. 4800
ZL2WOG Harris, P. F., 19 Campbell Street, Feilding. 5600
ZL2WON Kirkland, J. C., 36a Haydon Street, Palmerston North. 5301
ZL2WOW Herbert, A. R., Mataro Road, R.D. 45, Urenui. 4655
ZL2WP Douglas, W. L. B., 20 Stanhope Grove, Korokoro, Lower Hutt. 6008
ZL2WPH Hanover, P. M. (Mrs), 19 Gorton Street, Bulls. 5452
ZL2WPR Ryan, P. H., 189 Paterson Street West, Aramohe, Wanganui. 5002
ZL2WQ Hindley, J., 431 Waimea Road, Nelson. 7001
ZL2WR Whitehead, E. S., Unit 12, Taradale Masonic Village, 15 Devonshire Place, Taradale, Napier. 4001
ZL2WRJ Wallace, Robert, 1016 Southland Road, Hastings. 4201
ZL2WRM Millar, L. R., 18 Armagh Terrace, Marton. 5460
ZL2WRS Scott, R. D., 14 McLean Street, Hawera. 4800
ZL2WRW Whenmouth, R., 2 Complin Street, Havelock North, Hastings. 4201
ZL2WS Scott, W. G., P.O. Box 859, Napier. 4015
ZL2WSA Simpson, A. W., 79 Cracroft Street, Waitara. 4656
ZL2WSS Wallace, S. A., 25a Smith Street, Dannevirke. 5491
ZL2WT Thomson, W. J., 33 Donald McLean Street, Newtown, Wellington. 6002
ZL2WW Hyndman, J. E., 7 Wadsworth Crescent, Blenheim. 7301
ZL2WX Day, D. G., 106 Cleveland Terrace, Nelson. 7001
ZL2WZ Wade, F., 26 Isabel Grove, Wainuiomata. 6008
ZL2WZZ Saelmans, J. J., 172a Pembroke Street, New Plymouth. 4601
ZL2XA Radio for the Print Disabled Inc., P.O. Box 360, Levin. 5500
ZL2YET Arnold, W. M., (Station located in Seatoun, Wellington), P.O. Box 30-344, Lower Hutt. 6315
ZL2YKY Cliff, M. A., 102 Smithfield Road, Wanganui. 5001
ZL2YZM Fenton, D. J., 27 Blake Street, Waitara. 4656
ZL2ZZZ Yamaya, K., Nelson Aviation College, P.O. Box 157, Motueka. 7161

ZL3 CALLSIGNS

ZL3AA McInnes, D. C., 91 Avonhead Road, Avonhead, Christchurch. 8004

ZL3AAA Garlick, R. A., 18 Harbour Road, Motueka. 7161

ZL3AAB Garlick, Zeld, 18 Harbour Road, Motueka. 7161

ZL3AAC Atkinson, H. R., 98 Condell Avenue, Papanui, Christchurch. 8005

ZL3AAD Alderson, G. E., 7 Priors Road, R.D. 1, Rangiora. 8254

ZL3AAG Batterbury, C., 46 Glenmore Avenue, Casebrook, Christchurch. 8005

ZL3AAH O'Brien, W. M., 255 Estuary Road, Christchurch. 8007

ZL3AAI Grey, G. R., 89 Walters Road, Christchurch. 8005

ZL3AAL Vincent, R. K., 1 Hall Street, Kaiapoi. 8252

ZL3AAN Colville, L. M., 115 Cameron Street, Ashburton. 8300

ZL3AAO Ballantyne, S. T., 9 Wilsons Road, St Martins, Christchurch. 8002

ZL3AAQ Banks, L. F., 84 Wakefield Street, Westport. 7601

ZL3AAS Silke, A. J., 61a Cheyenne Street, Upper Riccarton, Christchurch. 8004

ZL3AAT van Waeltsden, F. H. A. M., 138 Rolleston Street, Rakaia. 8355

ZL3AAU Miller, J. G., Whitewood Crescent, R.D. 5, Christchurch. 8021

ZL3AAY Bowie, A. F. S., 4 West Burn Terrace, Burnside, Christchurch. 8005

ZL3AAZ Allan, Lorna, 74 Good Street, Rangiora. 8254

ZL3AB Sullivan, M. T. D., 10 Farney Place, Parklands, Christchurch. 8009

ZL3ABA Allan, S. L., 74 Good Street, Rangiora. 8254

ZL3ABB McKay, D. J., 55 Wingate Street, Christchurch. 8005

ZL3ABC Hooker, R. O., 272 Wainoni Road, Christchurch. 8007

ZL3ABD Hancock, C. W. I., 17 Mafeking Street, Christchurch. 8007

ZL3ABH Middlemiss, I. R., 427 Linwood Avenue, Christchurch. 8006

ZL3ABJ Jensen, B. D., 21 Colwyn Street, Papanui, Christchurch. 8005

ZL3ABK Keen, R. A., Milford Clandeboye Road, R.D. 26, Temuka. 8752

ZL3ABL Brookes, I. A., 34 Allnatt Street, Temuka. 8752

ZL3ABN Lawry, D. W., 90 Awatea Road, Halswell, Christchurch. 8003

ZL3ABO Glass, B. L., 22 Hertford Street, Arrowtown. 9196

ZL3ABP Snushall, J. G., P.O. Box 108, Kaikoura. 8280

ZL3ABQ Bailey, K. W., 5 Wilson Street, Renwick, Blenheim. 7352

ZL3ABR Harris, G. T., 283 Cannon Hill Crescent, St Andrews Hill, Christchurch. 8008

ZL3ABS Smith, G. B., Pye Road, The Downs, R.D. 21, Geraldine. 8751

ZL3ABU Strachan, I. S., 22 Rowses Road, Christchurch. 8006

ZL3ABW Maunder, H. B., 23 Buchanans Road, Riccarton Park, Christchurch. 8004

ZL3ABY O'Sullivan, K. D., 53 Marlborough Street, Greymouth. 7801

ZL3AC Christchurch Branch NZART (Inc.), see Branch Directory

ZL3ACA Nuth, G. L. (Miss), c/- Newsroom (Nights), Christchurch Press Co., Cathedral Square, Christchurch. 8001

ZL3ACB Mollison, G. W. P., 11 Goya Place, Christchurch. 8005

ZL3ACC Chambers, C. H., 21b De Ville Place, Christchurch. 8006

ZL3ACD Batchelor, G. W., 41 Kirkwood Avenue, Christchurch. 8004

ZL3ACE Dodgshun, J. C., 10 Devonport Lane, Christchurch. 8001

ZL3ACF Richardson, J. T., 3 Monowai Crescent, Christchurch. 8009

ZL3ACH White, D. J., 1 Pittman Place, Waimate. 8791

ZL3ACL Bidlake, R. P., 24 James Street, Timaru. 8601

ZL3ACM Zampese, M. J. (Mrs), 26 Olwyn Terrace, Frankton, Hamilton. 2001

ZL3ACN Honey, R. M., 167 Brittan Street, Hokitika. 7900

ZL3ACP Van Slooten, F., 16 Greenhurst Street, Sockburn, Christchurch. 8004

ZL3ACS Borgfeldt, C. D., 37 Blankney Street, Hornby, Christchurch. 8004

ZL3ACT Patten, G. J., 3 Veitches Road, Casebrook, Christchurch. 8005

ZL3ACU McKay, B., 23 Palmside Street, Hoon Hay, Christchurch. 8002

ZL3ACW Crawford, W. E. H., 3 Melville Street, Christchurch. 8005

ZL3ACX Robbins, K. F., 83 Springfield Road, St Albans, Christchurch. 8001

ZL3AD Donehue, W. R., No 1 R.D., Timaru. 8621

ZL3ADA Bell, R. W., 32 Flower Street, Christchurch. 8005

ZL3ADB Crase, G. E., 59 Wakefield Street, Westport. 7601

ZL3ADC Lintott, N., 49 Jocelyn Street, Redwood, Christchurch. 8005

ZL3ADF Hirtzel, J. E., 451 Greers Road, Christchurch. 8005

ZL3ADG Burnside High School Radio Club, (Trustee ZL3TQH), Greers Road, Christchurch. 8005

ZL3ADH Boote, R. J., 8 Hinton Road, Karoro, Greymouth. 7821

ZL3ADI Ingram, A. W. W., 10 Nortons Road, Christchurch. 8004

ZL3ADJ Jennings, L. W., 23 Kirk Street, Kaiapoi. 8252

ZL3ADL Wise, R. A., F29 Hannon Courts, 85 Poulsen Street, Christchurch. 8002

ZL3ADN Dykes, G., 3 Fraser Place, Rangiora. 8254

ZL3ADO Dolamore, Carleen, 292 Dunbarton Street, Redwood, Christchurch. 8005

ZL3ADP MacDonald, D. C., 221 Middle Road, Ashburton. 8300

ZL3ADQ Hamilton, T. J. C., 2/43 Ravensdale Rise, Westmorland, Christchurch. 8002

ZL3ADS Squire, D. D., Waitohi, Temuka. 8752

ZL3ADT Johnson, R. D., 189 Queensbury Street, Burwood, Christchurch. 8006

ZL3ADV Phillips, R. W., 31 Appleby Crescent, Christchurch. 8005

ZL3ADZ Wignall, T. J. S., 2/43 McLean Street, Linwood, Christchurch. 8006

ZL3AE May, Sharron, 156 Pages Road, Timaru. 8601

ZL3AF Ashburton Branch NZART (Inc.), see Branch Directory

ZL3AFB Stirling, K. W., 37 Kelvin Crescent, Ashburton. 8300

ZL3AFC Simpson, P. R., 168c Monks Spur Road, Redcliffs, Christchurch. 8008

ZL3AFD Haberecht, D. C., 272 Wainoni Road, Christchurch. 8007

ZL3AFE Zampese, L., 26 Olwyn Terrace, Frankton, Hamilton. 2001

ZL3AFG Wyks, W. G., C/- Dr T. J. Seed, 4 Westmont Street, Ilam, Christchurch. 8004

ZL3AFH Latham, W. I., 168 Mackenzie Avenue, Opawa, Christchurch. 8002

ZL3AFJ Stone, W., 69 Mary Street, Papanui, Christchurch. 8005

ZL3AFN Griffiths, J. P., 105 Brougham Street, Westport. 7601

ZL3AFO Christensen, P. J., 11 Ridgeway Place, Hamilton. 2001

ZL3AFP Smith, D. L., 9 Kingston Place, Bishopdale, Christchurch. 8005

ZL3AFQ Duxbury, I. N., Stephen's Bay Road, Stephen's Bay, R.D. 2, Motueka. 7161

ZL3AFR Burke, J. P., 246 Main North Road, Redwood, Christchurch. 8005

ZL3AFS Percy, E. A., 239 Condell Avenue, Papanui, Christchurch. 8005

ZL3AFV Henden, J. R., 221 Innes Road, St Albans, Christchurch. 8005

ZL3AFW Wilson, W. E., Brickfield Road, R D 2, Hokitika. 7900

ZL3AFX Morrin, M. E., 2/22 Bowenvale Avenue, Christchurch. 8002

ZL3AFZ Hall, C. L., 20 Sumner Street, Spreydon, Christchurch. 8002

ZL3AG Roberts, G. C., 59 Thomson Street, Ashburton. 8300

ZL3AGA Bolland, N., 12 Brent Place, Christchurch. 8005

ZL3AGB Barrett, T., 47 Arnold Street, Sumner, Christchurch. 8008

ZL3AGF Blanchard, J. S., 37 Reynolds Avenue, Bishopdale, Christchurch. 8005

ZL3AGG Pope, G. C., Flat 8, 27 Seddon Street, Timaru. 8601

ZL3AGJ Whitlow, T. J., 260 West Belt, Rangiora. 8254

ZL3AGL Sinclair, S., 54 Withells Road, Avonhead, Christchurch. 8004

ZL3AGM Jackson, B. A., 22 Guadeloupe Crescent, Granada Village, Wellington. 6004

ZL3AGO McManus, T. C., 15 Tedder Avenue, North Beach, Christchurch. 8009

ZL3AGP Thomson, G. G., 10 Hanrahan Street, Christchurch. 8004

ZL3AGQ Harris, D. W., 67 Avers Street, Rangiora. 8254

ZL3AGR McCallister, C. R., 508 Tuam Street, Linwood, Christchurch. 8001

ZL3AGS Lovell, J. D., 41 Yardley Street, Avonhead, Christchurch. 8004

ZL3AGT Foster, I. M., Cronadun, R.D. 1, Reefton. 7853

ZL3AGY Moyle, J. R., 68c Clyde Road, Christchurch. 8004

ZL3AH Hernandez, A., c/- 31 St Johns Terrace, Tawa, Wellington. 6006

ZL3AHL Lyon, K. W., 401 Greers Road, Bishopdale, Christchurch. 8005

ZL3AHM Dineen, R. T., 106 Halswell Junction Road, Halswell, Christchurch. 8003

ZL3AHN Whitely, W. G., 13 Heyders Road, Christchurch. 8009

ZL3AHO Reed, B. S., 105 Spinnaker Drive, Whitby, Porirua. 6006

ZL3AHP Payne, A. T., 9 Factory Road, Belfast, Christchurch. 8005

ZL3AHQ McDonald, A. W., 73a Cranford Street, St Albans, Christchurch. 8005

ZL3AHS Symes, Barbara, 5 Gilwell Street, Christchurch. 8009

ZL3AHT Holland, Sue, 15 Zephyr Terrace, Governors Bay, Lyttelton. 8033

ZL3AHU Holland, M. C., 15 Zephyr Terrace, Governors Bay, Lyttelton. 8033

ZL3AHV Papanui High School Radio Club, (Trustee: ZL3AHP), Langdons Road, Christchurch. 8005

ZL3AHW Williams, N. D., P.O. Box 18-614, New Brighton, Christchurch. 8030

ZL3AHX Wells, P. H., 27 Samuel Street, Hoon Hay, Christchurch. 8002

ZL3AHY Lovell, Mary, 41 Yardley Street, Avonhead, Christchurch. 8004

ZL3AI Fraser, D. J., P.O. Box 12, Waipara. 8270

ZL3AIB Timms, R. C., 7 Derenzy Place, Christchurch. 8004

ZL3AIC Chilton, M. T., 183 Belfast Road, Belfast, Christchurch. 8005

ZL3AID Hawksley, K. A., 4 Winchfield Street, Christchurch. 8007

ZL3AIG

ZL3AIG Lorimer, B. C., 339a King Street, Temuka. 8752
ZL3AIK Taylor, D. A., 9 Dusky Place, Twizel. 8773
ZL3AIR Simpson, C. W., 12 Sandringham Place, Christchurch. 8005
ZL3AIV Rowlands, R. J., 208 Riccarton Road, Riccarton, Christchurch. 8004
ZL3AIX Tillman, E. S., 19b Mulberry Place, Christchurch. 8005
ZL3AJ McDonald, K. R., 44 Inwoods Road, Christchurch. 8009
ZL3AJA Keeley, L. J., 23 Wills Street, Ashburton. 8300
ZL3AJC Strachan, J. H., 41 New Brighton Road, Christchurch. 8006
ZL3AJE Robbins, D. J., 66 Acacia Avenue, Christchurch. 8004
ZL3AJK Jenkins, R. M., 486 Marine Parade, South New Brighton, Christchurch. 8007
ZL3AJW Wilds, J. R., 32 Bay View Road, Cass Bay, Lyttelton. 8012
ZL3AK Rowe, D. J., 10 Marama Crescent, St Andrews Hill, Christchurch. 8008
ZL3AL Smythe, G. C., 147 Highsted Road, Bishopdale, Christchurch. 8005
ZL3AM Kirk, R. E., 43 Dover Street, Christchurch. 8001
ZL3AN McLean, J. L., P.O. Box 6, Westport. 7615
ZL3AO Bell, M. W., 203 Weston Road, Christchurch. 8005
ZL3AP Whitfield, S. J. N., 48 Hawthornden Road, Avonhead, Christchurch. 8004
ZL3AQ Mattingley, G. T., 89 Creek Road, Ashburton. 8300
ZL3AR Hunter, A. M., Cochrane Road, R.D. 7, Ashburton. 8300
ZL3ARJ Adams, R. J., 30 Wesley Street, Kaiapoi. 8252
ZL3ARM Maher, R. H., 172e Rockingham Road, Christchurch. 8007
ZL3AS Sams, C. G. A., 18 Rhyl Place, Christchurch. 8005
ZL3ASK Tuffnell, B. R., 387 River Road, Christchurch. 8001
ZL3AT Mahoney, M. F., 50 Westburn Terrace, Christchurch. 8004
ZL3ATP Pringle, A. T., c/- D. Hutchison, 44 Hawthornden Road, Christchurch. 8004
ZL3ATV O'Brien, C. M., 104 Estuary Road, Christchurch. 8007
ZL3AV Blyth, D. H., 18 Kirk Street, Kaiapoi. 8252
ZL3AW Phillips, M. A. (Dr), 86 Roberta Drive, Spreydon, Christchurch. 8002
ZL3AX Tillman, N. W., 2/20 McCormacks Bay Road, Christchurch. 8008
ZL3AZ Rayner, D. A., 23 Waitohi Street, Hornby, Christchurch. 8004
ZL3BAB Ackroyd, B. E. I. (Mrs), Ackroyd Road, Waitohi, R.D. 25, Temuka. 8752
ZL3BB Gray, G. W., 31 Denniston Crescent, Redwood, Christchurch. 8005
ZL3BC Larsen, C. A. (Mrs), c/- 88 Chalmers Avenue, Ashburton. 8300
ZL3BCR Rowe, B. C. T., 40 Harris Street, Waimate. 8791
ZL3BE Christchurch Boys' High School Radio Club, (Trustee: ZL3TX), P.O. Box 8157, Riccarton, Christchurch. 8034
ZL3BG Himing, L. C., 23 Coopers Road, Shirley, Christchurch. 8006
ZL3BH Bowman, G. R. B., 158 Revell Street, Hokitika. 7900
ZL3BI Brice, K. L., 18 College Avenue, Christchurch. 8005
ZL3BK Halliburton, G. A., 41a Augusta Street, Christchurch. 8008
ZL3BL Holland, B. N., 75 Blankney Street, Christchurch. 8004
ZL3BN Sim, G. W., 6a Oakhurst Place, Russley, Christchurch. 8004
ZL3BOJ Lane, G. E. V., 2/94 Oxford Crescent, Lyttelton. 8012
ZL3BP Mountford, T. G., 2/207a Otipua Road, Timaru. 8601
ZL3BPA Dawson, S. F., 148b Hawthornden Road, Avonhead, Christchurch. 8004
ZL3BQ Urlwin, Anne, P.O. Box 17-512, Sumner, Christchurch. 8030
ZL3BR White, M. G., 36 Margaret Street, Stratford. 4700
ZL3BS Tweedie, S. B., 167 Wales Street, Oaklands, Christchurch. 8003
ZL3BSH Richards, P. D., 7 Mortimer Street, Waimate. 8791
ZL3BT White, E. I., 7a Worsleys Road, Cracroft, Christchurch. 8002
ZL3BU McNeill, E. D., 43b Bowenvale Avenue, Christchurch. 8002
ZL3BV Schaeff, L. M., 10 Bridge Street, Greymouth. 7801
ZL3BX Patrick, B. L., 1 Kanuku Place, Cashmere, Christchurch. 8002
ZL3BY Halford, B. B., 37 McHardie Street, Wallaceville, Upper Hutt. 6007
ZL3BZ Johnson, C., 7 Hillview Place, Pleasant Point. 8772
ZL3CA Sandford, T. W., Prebbleton Holiday Park, 18 Blakes Road, Prebbleton. 8153
ZL3CAN Howell, H. G. M., 12a Salford Avenue, Christchurch. 8005
ZL3CB Newton, B. A. (Mrs), 150 Alford Forest Road, Allenton, Ashburton. 8300
ZL3CC Crosby, K. G., 175 Trevors Road, Ashburton. 8300
ZL3CD Smillie, J. W., 7 Barnes Street, Timaru. 8601
ZL3CE Hewson, J. N., 8 Dunns Avenue, Pines Beach, Kaiapoi. 8252
ZL3CG Silverwood, K., 12 Banbury Street, Waimangaroa. 7650
ZL3CH Cook, H. F., 5/16 Wanaka Place, Mairehau, Christchurch. 8005
ZL3CJ Parker, T. L., 148b Panorama Road, Sumner, Christchurch. 8008
ZL3CK Seay, M. R., Dept of Anaesthesia, Middlemore Hospital, Private Bag, Otahuhu. 1133
ZL3CKI McGlinn, A. J., c/- Graeme McGlinn, P.O. Box 2099, Christchurch. 8015

ZL3CM Burrell, K. M., 5 Jacaranda Grove, Maungaraki, Lower Hutt. 6009
ZL3CN Mantell, G. N., 39 Cook Drive, Whitianga. 2856
ZL3CO Wylie, P. B., 101 Englefield Road, Belfast, Christchurch. 8005
ZL3CR Smith, W. E., 9 Wolsey Place, Hillmorton, Christchurch. 8002
ZL3CRM McTurk, C. R., P.O. Box 102, Amberley. 8251
ZL3CS Downer, G. H., 29a Grange Street, Opawa, Christchurch. 8002
ZL3CT Bennett, R. S., 67 Aronui Road, Alexandra. 9181
ZL3CTN Scott, M. J., 397b Durham Street, Christchurch. 8001
ZL3CU Moffatt, S. Z., 17 Wayside Avenue, Christchurch. 8005
ZL3CV Chapman, A. R. B., 2/70 Proctor Street, Papanui, Christchurch. 8005
ZL3CW Calvo, J., 14 Hooper Avenue, Pukekohe. 1800
ZL3CX Emerson, T. C., 67 Epsom Avenue, Epsom, Auckland. 1003
ZL3CY Hutchison, D. E., 44 Hawthornden Road, Christchurch. 8004
ZL3DA Johnson, D. A., 56 Thorp Street, Motueka. 7161
ZL3DAC Croker, K. J., c/- Waimangaroa Post, via Westport. 7650
ZL3DAD Hansen, C. A., 315 West Belt, Rangiora. 8254
ZL3DAT Cullen, L., 46 Wilton Crescent, Christchurch. 8005
ZL3DB Buschi, B. D., c/- Sorenson, 62 Shortland Street, Christchurch. 8006
ZL3DC Grindrod, R. J., 5 Macrocarpa Place, Ranui, Auckland. 1008
ZL3DD Mitchell, A. R., 55 Shoreham Street, Blockhouse Bay, Auckland. 1007
ZL3DE Hawes, S. C., Timaru Hospital, Timaru. 8630
ZL3DES Thomas, D. J., 90 Allens Road, Ashburton. 8300
ZL3DF Ellis, M. R., 22 Oldwood Street, Christchurch. 8005
ZL3DG Hood, N. D., 47a Aorangi Road, Christchurch. 8005
ZL3DGW Ward, D. G., (VK4DGV), P.O. Box 209, Bracken Ridge, Queensland 4017, Australia
ZL3DH Hardie, W. S., 245a Harewood Road, Christchurch. 8005
ZL3DI Tylee-Porter, G. J., 62 Broad Street, Southbridge. 8150
ZL3DJ Gill, M. E., River Road, Greenpark, R.D. 2, Christchurch. 8021
ZL3DK Walker, D. J., 36 Ardrossan Avenue, Flaxmere, Hastings. 4201
ZL3DL Barker, L. G., 37 Burwood Road, Burwood, Christchurch. 8009
ZL3DM McGuire, D. H., 14 Snell Crescent, Waihi Beach, Waihi. 3060
ZL3DO O'Malley, D. B., 72 Crofton Road, Christchurch. 8005
ZL3DP Meikle, B., 24 Abraham Heights, Nelson. 7001
ZL3DR Godfrey, R. J., Main South Road, R.D. 2, Kaikoura. 8280
ZL3DS Brewster, D. W., 15 Dunoon Place, Christchurch. 8006
ZL3DT Searle, G. G., Lake Mahinapua, Hokitika. 7900
ZL3DV Jefferis, E. W., 4 Cunningham Street, Leeston. 8151
ZL3DWW Watts, D. W., 8 Holmes Street, Waimate. 8791
ZL3DX McGee, W. H., 116b Highsted Road, Harewood, Christchurch. 8005
ZL3DXC Canterbury DX Association, Trustee: ZL3NZ, Waikuku Beach. 8254
ZL3DY Firman, R. K., F2 - 16 Norwood Street, Timaru. 8601
ZL3DZ Thomson, G., 2 Naylor Street, Waimate. 8791
ZL3FB Schroeder, W. F. (Rev), The Vicarage, 8 Roxburgh Street, Christchurch. 8002
ZL3FF Kelly, I. J. H., 44 Rangiora-Woodend Road, Woodend. 8255
ZL3FG O'Neill, J. J., 26 McBratneys Road, Christchurch. 8006
ZL3FH Francis, C. G., 6 Pratt Street, New Brighton, Christchurch. 8009
ZL3FJ Brown, D. A., 62 Hudson Street, Christchurch. 8005
ZL3FK Hepburn, L. D., 22 Gwynfa Avenue, Cashmere, Christchurch. 8002
ZL3FM Campbell, R. J., 3 Shamrock Place, Oaklands, Christchurch. 8003
ZL3FMS Simpson, F. M., 1007 Main South Road, Greymouth. 7801
ZL3FN Wilson, R. J., 11 High Street, Greymouth. 7801
ZL3FO Blackmore, J. H., 364 Riverlaw Terrace, St Martins, Christchurch. 8002
ZL3FP Kyle, E. A. J., c/- P.J. Rogers, 413 Cashmere Road, Christchurch. 8002
ZL3FR Nixon, M. A., 10 Dulles Place, Papanui, Christchurch. 8005
ZL3FS Seed, D. P. (Mrs), 4 Westmont Street, Ilam, Christchurch. 8004
ZL3FT Clapham, T. S., P.O. Box 413, Nelson. 7015
ZL3FU McPhail, T. K., 7 Ostend Place, Christchurch. 8004
ZL3FW O'Brien, J. R., 68a Windermere Road, Papanui, Christchurch. 8005
ZL3FX McSherry, O. E., 50 Napier Road, Havelock North. 4201
ZL3FZ Fraser, B. H. L., 23879 Blackburn Avenue, Corning, CA 96021-9244, U S A
ZL3GB Bryant, H. G. H., 44 Ward Street, Kaikoura. 8280
ZL3GC Baker, D. M., P.O. Box 234, Ashburton. 8300
ZL3GD Kingan, S. G., c/- Mrs R.M.Hewson, R.D. 8, Anama, Ashburton. 8300
ZL3GE Welford, A. R., 12 Devon Street, Timaru. 8601
ZL3GF Bool, W. A., 145 South Bay Parade, South Bay, Kaikoura. 8280

ZL3GI	Halliburton, G. J., 6 Barlow Street, Fendalton, Christchurch. 8004	ZL3JL	McFarlane, A. R., 88 Chalmers Avenue, Ashburton. 8300
ZL3GJ	Reynolds, A. E., 117 Roker Street, Christchurch. 8002	ZL3JM	Bennett, P. W., 85 Leinster Avenue, Raumati South, Wellington. 6450
ZL3GK	Richardson, T. C. W., 12 Hammond Place, Spreydon, Christchurch. 8002	ZL3JN	Mummary, B. H., 8 McIntyre Street, Shirley, Christchurch. 8001
ZL3GL	May, Glenn, 156 Paces Road, Timaru. 8601	ZL3JO	Papesch, A. J. G. (Dr), 37 Rembrandt Place, Burnside, Christchurch. 8005
ZL3GM	Pimm, O. W., 59a Dunbarton Street, Redwood, Christchurch. 8005	ZL3JP	Langley, E. W., Beukenholds Home, 419 New Brighton Road, New Brighton, Christchurch. 8007
ZL3GO	Scott, T. R., Ruapuna, No 5 R.D., Ashburton. 8300	ZL3JQ	Poll, A. K., 155 Halswell Road, Christchurch. 8002
ZL3GP	Middlemiss, P. G., 17 De Blage Place, Burwood, Christchurch. 8006	ZL3JR	Kelly, S. J. C., 127 Summervale Drive, Christchurch. 8008
ZL3GQ	Watson, P. W., Hampton Road, No. 4 R.D., Christchurch. 8021	ZL3JS	Smith, K. R., 231 Church Street, Timaru. 8601
ZL3GR	Rowe, N. L., P.O. Box 4013, Mt Maunganui. 3030	ZL3JT	McMahon, D. D., 15 Harling Avenue, Hillmorton, Christchurch. 8002
ZL3GS	Wright, G. M., 25 Dunedin Street, Redwood, Christchurch. 8005	ZL3JU	Sorensen, A. G., 62 Shortland Street, Wainoni, Christchurch. 8006
ZL3GT	Somerville, J. H., 14 Park Lane, Timaru. 8601	ZL3JV	MacGeorge, B. A., 9 Opie Street, Waimate. 8791
ZL3GV	Keremelis, T., Flat 1, 421 Worcester Street, Christchurch. 8001	ZL3JW	Johnston, Lance, 2 Waitaki Street, New Brighton, Christchurch. 8007
ZL3GW	Searle, Val, 7 Whitcombe Terrace, Hokitika. 7900	ZL3JY	Stalker, J. P., Greenpark, No 4 R.D., Christchurch. 8021
ZL3GX	Chapman, Alan, 7 Dellow Place, Spreydon, Christchurch. 8002	ZL3JZ	Dumbleton, R. S., 74 Kaiwara Street, Christchurch. 8002
ZL3GZ	Smith, H. E., 15 Ferry Road, Spring Creek, Blenheim. 7350	ZL3KA	Macer, J. J., 31 Colwyn Street, Papanui, Christchurch. 8005
ZL3HA	Arnold, H. F., Studio 6, Churchill Courts, 73 Stapletons Road, Richmond, Christchurch. 8001	ZL3KB	Barnsdall, K. P., 50 Cardrona Street, Christchurch. 8005
ZL3HAG	Hag, P., c/- 558 Wairakei Road, Christchurch. 8005	ZL3KC	Cuttriss, S. A., 33 Kercoburn Street, Christchurch. 8002
ZL3HAM	Buckland, Tony, 5a Charles Street, Prebbleton, Christchurch. 8153	ZL3KD	Harding, A. G. F., 6 Bowline Place, Whitby, Porirua. 6006
ZL3HB	Deans, R. H., 11/8 Dunlop Court, Mermaid Waters, QLD 4218, Australia	ZL3KE	McGrath, R. E., 42 Lyndhurst Crescent, Christchurch. 8007
ZL3HC	Brittenden, C. E. R., 329 Wainoni Road, Christchurch. 8007	ZL3KG	Gibbins, Kevin C., 41 Dunn Street, Christchurch. 8002
ZL3HD	Chambers, D. H., 5 Stiles Place, Dallington, Christchurch. 8006	ZL3KH	Heyworth, K. C., 327 River Road, Richmond, Christchurch. 8001
ZL3HF	McDonald, B. M., 43 Rimu Street, Timaru. 8601	ZL3KI	Jackson, D. W., 13 Kim Crescent, Blenheim. 7301
ZL3HG	Davy, K. T., 65 Stafford Street, Hokitika. 7900	ZL3KIM	Webb, K. R., 22 Chaucer Street, Rolleston, Christchurch. 8004
ZL3HGB	Bouwknegt, H. G., 35 Elizabeth Street, c/- PDC, Cave. 8770	ZL3KK	Goodale, T. T., 1 Totara Drive, Oxford. 8253
ZL3HH	Wylie, R. L., 21 Vickery Street, Kaiapoi. 8252	ZL3KL	Howell, B. C., 6 Deepdale Street, Christchurch. 8005
ZL3HI	Holtum, J. W. A., 18 Brussels Place, Birkenhead, Auckland. 1310	ZL3KP	Parr, W. E., 30 Cranbrooke Ave, Christchurch. 8005
ZL3HK	Hayes, W. F., 105b Shakespeare Street, Greymouth. 7801	ZL3KQ	Hellyar, G. I., 93 Marshlands Road, Christchurch. 8006
ZL3HM	Evans, C. E., 123 Beach Road, Kaikoura. 8280	ZL3KR	Hughes, A. G., 4 Exton Street, Redwood, Christchurch. 8005
ZL3HN	Holtum, J. W., 461 Johns Road, Harewood, Christchurch. 8005	ZL3KS	Downer, M. H., 34 Torquay Place, Christchurch. 8005
ZL3HO	Lowry, R. C., 2/1122 Avonside Drive, Avondale, Christchurch. 8006	ZL3KTN	Noah, R. C., 68 Hawkhurst Road, Lyttelton. 8012
ZL3HP	Hoving, P., 24 Royal Park Drive, Parklands, Christchurch. 8009	ZL3KU	Waters, K. A., 33 Cook Street, Timaru. 8601
ZL3HRB	Boehner, H. R., c/- 558 Wairakei Road, Christchurch. 8005	ZL3KV	Brown, H. H., 77 The Avenue, Sunnybank Hills, Brisbane, QLD 4109, Australia
ZL3HS	Kemphorne, J. H., 44 Cannon Hill Crescent, Christchurch. 8008	ZL3KWH	Heyward, K. W., 46 Yellowstone Crescent, Christchurch. 8009
ZL3HT	Lyford, A. R., 35 Aniseed Grove, Timberlea, Upper Hutt. 6007	ZL3KY	Talbot, A. D., 37 Park View Terrace, Timaru. 8601
ZL3HU	Sandford, B. D., 9 Verena Place, Green Bay, Auckland. 1007	ZL3LA	Ludbrook, S. W., 175a Palmers Road, New Brighton, Christchurch. 8009
ZL3HW	Wallace, C. W., 1/108 Totara Street, Christchurch. 8004	ZL3LB	Hamilton, W. R., 9b Amstel Lane, Shirley, Christchurch. 8001
ZL3HX	Marshall, D. A., P.O. Box 57, Woodend. 8255	ZL3LC	Corner, P. E., P.O. Box 13-376, Armagh, Christchurch. 8031
ZL3HY	Fleming, J. G., 9 Kibblewhite Street, P.O. Box 18-714, Christchurch. 8030	ZL3LD	Saunders, B. C., 14 Stackhouse Avenue, Christchurch. 8005
ZL3HZ	Southgate, W. A., 7 Paeroa Street, Christchurch. 8004	ZL3LE	Guard, B. N., S.H. 69, Cronadun, R.D. 1, Reefton. 7853
ZL3IA	Tyerman, P. F., 9 Elstow Place, Spreydon, Christchurch. 8002	ZL3LEE	Lee, C., 29 Jollie Street, Linwood, Christchurch. 8006
ZL3IB	Walker, J. R. L., 19 Athol Terrace, Christchurch. 8004	ZL3LF	Baynam, B. F., Gilbert Road, R.D. 1, Whangarei. 0121
ZL3IC	McCulloch, E. N., 259 Williams Street, Kaiapoi. 8252	ZL3LFC	Jones, S., 29 Sandown Crescent, Christchurch. 8007
ZL3IDA	Andrews, I. D., P.O. Box 8393, Christchurch. 8034	ZL3LH	Muir, D. N., 5 Brighton Crescent, Palmerston North. 5301
ZL3IE	Hopkinson, L. G., 107 Evans Street, Timaru. 8601	ZL3LI	Neal, J. V. (Rev), 118 Budge Street, Blenheim. 7301
ZL3IG	Ross, P. J., 4 Oakfield Street, Christchurch. 8005	ZL3LIZ	Buckland, Liz, 5a Charles Street, Prebbleton, Christchurch. 8153
ZL3II	Serra, K. C., 15 Stapletons Road, Christchurch, P.O. Box 26-034, Christchurch. 8030	ZL3LJC	Osborne, R. R. W., C/- Camp David R.D. 3, Waipara. 8270
ZL3IJ	Inglis, J. M., 288 Estuary Road, Christchurch. 8007	ZL3LL	Leadley, J. M. (Mrs), Dromore, R.D. 2, Ashburton. 8300
ZL3IM	Sullivan, J. T., 34 Rollesby Street, Christchurch. 8002	ZL3LM	Burrell, N. W., 209 Iram Road, Christchurch. 8004
ZL3IN	Cox, R. (Dr), 16 College Avenue, Christchurch. 8005	ZL3LN	Penney, V. J., 16 Derrett Place, Christchurch. 8002
ZL3IQ	Drummond, W. P., 11 Reid Crescent, Ashburton. 8300	ZL3LO	Cairns, A., 42 Santa Maria Avenue, Mt Pleasant, Christchurch. 8008
ZL3IR	Benson, A. F., 32 Euston Street, Christchurch. 8004	ZL3LP	Brown, H. P., 8 Neill Street, Hornby, Christchurch. 8004
ZL3IS	Oka, N., c/- Bell, 203 Western Road, Christchurch. 8005	ZL3LQ	Paltridge, K. K., 131 Warrington Street, Christchurch. 8001
ZL3IT	MacDonald, J. D., P.O. Box 15, Naseby. 9071	ZL3LS	Miller, G. C., 30 Nirvana Street, Brooklands, Christchurch. 8009
ZL3IU	Gray, N. C., Franks Road, R.D. 6, Ashburton. 8300	ZL3LT	Stanbury, A. C., 43 Dunedin Street, Redwood, Christchurch. 8005
ZL3IV	Vickery, K., 139 Raven Street, Kaiapoi. 8252	ZL3LU	Campbell, G. R., 24 Rosamund Place, Halswell, Christchurch. 8003
ZL3IZ	Duncan, A., 28a Bowen Street, Upper Riccarton, Christchurch. 8004	ZL3LVS	Van Schooten, L. A. A., 195b Wairakei Road, Christchurch. 8005
ZL3JA	Avery, J. L., 25 Worthy Street, Riccarton, Christchurch. 8004	ZL3LX	Kirkpatrick, I. J., 99 Bickerton Street, Christchurch. 8006
ZL3JAW	Weddell, J., 43 Feldwick Drive, Kaiapoi. 8252	ZL3LY	Eddington, J. A., 4 Tasman Place, Christchurch. 8006
ZL3JC	Watson, J. P., 12 Fort Street, Timaru. 8601	ZL3LZ	Dale, A. J. E., 7 Bradshaw Terrace, Riccarton, Christchurch. 8001
ZL3JD	Van Kuilenberg, Phil, 45 Farrelly Avenue, Owariraka, Auckland. 1004	ZL3MA	Kingswell, G. N., "Highlands", P.O. Box 93, Geraldine. 8751
ZL3JE	Stewart, D. A., 33 King Street, Pareora. 8790	ZL3MC	McKenzie, D. S., 47 Kotare Street, Fendalton, Christchurch. 8004
ZL3JF	Henderson, H. P., 35 Hillview Crescent, Timaru. 8601	ZL3MD	Millyard, A. M., 3/3 Head Street, Sumner, Christchurch. 8008
ZL3JG	Rawstorn, G. J., P.O. Box 14-106, Christchurch Airport. 8030	ZL3ME	Bramley, C. J. (Bram), 7 Edward Street, Prebbleton. 8153
ZL3JI	Foulds, L. F., 45 Jervois Street, Christchurch. 8007	ZL3MF	Oates, D. J., P.O. Box 20, Westport. 7615
ZL3JJ	Crump, M. W., 55b Newnham Street, Rangiora. 8254	ZL3MG	Urwin, R. A., P.O. Box 17-512, Sumner, Christchurch. 8030
		ZL3MG5	Middleton Grange School, Attn: Grant Rawstorn, 50 Acacia Avenue, Christchurch. 8004

ZL3MH

ZL3MH Macer, D. R. J., 31 Colwyn Street, Papanui, Christchurch. 8005

ZL3MI Sullivan, R. E., 103a Jeffreys Road, Bryndwr, Christchurch. 8005

ZL3MJ Lewis, C. T., 30 Te Rama Place, Wainoni, Christchurch. 8006

ZL3MJS Stutterfield, Mike, 138 Rutland Street, St Albans, Christchurch. 8005

ZL3ML McNicol, A. D., 26 Gainford Street, Christchurch. 8004

ZL3MM Hills, R. I., 25 Rapaki Road, Christchurch. 8002

ZL3MN Gibson, E. N., 52 Rimu Street, Timaru. 8601

ZL3MO Cole, W. R., Grange Settlement Road, Temuka. 8752

ZL3MQ McMaster, R. J., 8 Greens Road, R.D. 1, Kaiapoi. 8252

ZL3MR Warner, J. A., 11 Goulds Road, Timaru. 8601

ZL3MS Brash, J. P., 5b Indira Lane, Cashmere, Christchurch. 8002

ZL3MT Thompson, M. C. (Dr), c/- RJ Burdon, 6 Warwick Street, Blenheim. 7301

ZL3MU Henshall, E. H. (Mrs), 281 Innes Road, Christchurch. 8005

ZL3MX Burnett, A. M. R., 10 Leda Place, North New Brighton, Christchurch. 8009

ZL3MY Searle, R. W., 7 Whitcombe Terrace, Hokitika. 7900

ZL3MZ Garlick, P. R., 3 Everet Street, Motueka. 7161

ZL3NA Robinson, D. G., Kowhitirangi, R.D. 1, Hokitika. 7900

ZL3NAH Gorton, D. M., F1/36 Stourbridge Street, Christchurch. 8002

ZL3NAI Batey, Stephanie, 408 Barrington Street, Spreydon, Christchurch. 8002

ZL3NB Carney, Bill, 174 Beach Road, Christchurch. 8009

ZL3NE Gyde, R. M., 26 Anita Avenue, Mt Roskill, Auckland. 1004

ZL3NG McVicar, J. J., 17 Winchester Street, Merivale, Christchurch. 8001

ZL3NH Rogers, P. J., Corner Cashmere and Happy Home Roads, Christchurch. 8002

ZL3NI Walker, D. N., 23 Lismore Street, Oamaru. 8901

ZL3NJA Allan, J. J., Egans Road, R.D. 1, Rangiora. 8254

ZL3NL Tait, A. Mc M., 8 Ashbourne Street, Christchurch. 8005

ZL3NO Johannis, K. L., Unit 1, Bainswood, 191 King Street, Rangiora. 8254

ZL3NP Johnstone, G. V. O., 2/28 New Brighton Road, Shirley, Christchurch. 8006

ZL3NQ Drever, G. R., 36c Burnett Street, Ashburton. 8300

ZL3NR Campbell, L. S., 10 Clotilda Place, Christchurch. 8005

ZL3NRA Hunt, Ray, "Cantara", Scargill Valley, R.D. 3, Amberley. 8270

ZL3NS Ostit, T., 128 Brookside Terrace, Christchurch. 8005

ZL3NT Blackwell, G. C., 5/82 Lincoln Road, Spreydon, Christchurch. 8002

ZL3NU Collett, L. M., 69 Cannon Hill Crescent, Mount Pleasant, Christchurch. 8008

ZL3NV O'Connor, E. P., 6 Stephens Street, Rangiora. 8254

ZL3NW MacKintosh, R. M., 144 Main North Road, R.D. 1, Kaiapoi. 8252

ZL3NX Edgar, M. M., 16 St Clio Street, Ilam, Christchurch. 8004

ZL3NY Stapley, G. P., 30 Larsens Road, Halswell, Christchurch. 8003

ZL3NZ Dacombe, G., 22 Allin Drive, Waikuku, North Canterbury. 8254

ZL3OA MacDonald, B. A., 82 Verran Road, Birkenhead, Auckland. 1310

ZL3OD Barnes, G. J., 37 Carlton Mill Road, Merivale, Christchurch. 8001

ZL3OE Richards, D. L., 38 Frankleigh Street, Christchurch. 8002

ZL3OF Milne, I. F., 401a Barrington Street, Spreydon, Christchurch. 8002

ZL3OI Godfrey, K. E., 3 Wycola Avenue, Hei Hei, Christchurch. 8004

ZL3OJ Digby, N. M., 4 Norfolk Street, Christchurch. 8005

ZL3OK Lark, M. J., 19 Motueka Quay, Motueka. 7161

ZL3ON Nicholls, J. B., 3 Cliff Street, Christchurch. 8008

ZL3OR Fallen, J. A., 116 Warren Crescent, Hillmorton, Christchurch. 8002

ZL3OT Bromley, R. N., 19 Denham Terrace, Waikari. 8276

ZL3OU Bellamore, A. H., 87 Radley Street, Christchurch. 8002

ZL3OV Scrivener, E. H., Flax Cottage, Main North Road, Waikuku. 8254

ZL3OX Mitchell, C. J., 320 Mt Pleasant Road, Christchurch. 8008

ZL3OY Coull, G., 45 Seven Oaks Drive, Christchurch. 8005

ZL3OZ Burberry, R. L., 25 Percival Street, Beckenham, Christchurch. 8002

ZL3PA Jenner, D. J., 62 Pembroke Road, Northland, Wellington. 6005

ZL3PAH Holliday, P. A., 275 River Road, Richmond, Christchurch. 8001

ZL3PB Lobb, G. W., 7 Ethne Street, St Albans, Christchurch. 8001

ZL3PD Pluck, R. L., 2/257 Cameron Street, Ashburton. 8300

ZL3PF Asher, A. S., 9 Pompeys Place, Akaroa. 8161

ZL3PG Dickson, D. W., 210 Cannonhill Crescent, Christchurch. 8008

ZL3PH Rowe, B., 250 Grahams Road, Burnside, Christchurch. 8005

ZL3PI Bartrum, B. R., 31b Bowenvale Avenue, Cashmere, Christchurch. 8002

ZL3PJ Grewar, M. A., P.O. Box 282, Hokitika. 7900

ZL3PK Allan, J. L., 74 Good Street, Rangiora. 8254

ZL3PM McGee, P. D., 1 Craigieburn Street, Darfield. 8172

ZL3PN Boorer, G. F., 48a Newton Street, Timaru. 8601

ZL3PO Turner, D. K., Selmers Road, R.D. 3, Blenheim. 7321

ZL3PP Crichton, R. J., 98 Estuary Road, South New Brighton, Christchurch. 8007

ZL3PR Petersen, C. M., 51 Derby Street, Westport. 7601

ZL3PS Streeter, P. J., 14 Maltby Avenue, Timaru. 8601

ZL3PT Douglas, J. C. (Mrs), P.O. Box 17, Ngakawau, Westport. 7650

ZL3PTB Bower, P. T., 15 Harper Street, Timaru. 8601

ZL3PTP Collins, P. T. P., 24 Montana Avenue, Ilam, Christchurch. 8004

ZL3PWS Spinetto, P. W., 8 Melissa Place, Russley, Christchurch. 8004

ZL3PX Chapman, G. A., 8 Boys Place, Christchurch. 8001

ZL3PZ Jackson, W. B., 42 Churchill Street, Kaikoura. 8280

ZL3QA Prentice, A. E., 2/2 Roberta Drive, Spreydon, Christchurch. 8002

ZL3QB McGlashan, D. C., 501b Ilam Road, Christchurch. 8005

ZL3QC Mullis, N. A., 104 Mooray Avenue, Bishopdale, Christchurch. 8005

ZL3QD Clark, E. R., 19 Farnswood Place, Redwood, Christchurch. 8005

ZL3QE Browne, E. M. J., 1 Taiaroa Place, Southbridge. 8150

ZL3QF Cotton, M., 9 James Drive, Church Bay, R.D. 1, Lyttelton. 8033

ZL3QG Ross, G. L., 255 Cannon Hill Crescent, Christchurch. 8008

ZL3QH Stanton, K. A., 17 Hanover Place, P.O. Box 31-095, Ilam, Christchurch. 8030

ZL3QI Wornall, C. J., 5 Menlo Terrace, St Andrews Hill, Christchurch. 8008

ZL3QJ Havord, P. R., 16 Worsleys Road, Christchurch. 8002

ZL3QK Dawson, R., 41 Garlands Road, Christchurch. 8002

ZL3QL Carrell, T. D., 33 Ryeland Avenue, Christchurch. 8004

ZL3QN Barber, F. E., 20 Lomax Place, Christchurch. 8004

ZL3QO Allan, J. M., Egans Road, R.D. 1, Rangiora. 8254

ZL3QQ Seed, T. J., 4 Westmont Street, Ilam, Christchurch. 8004

ZL3QR Gillman, G. H., 496 Tuahivi Road, 1 R.D., Kaiapoi. 8252

ZL3QT Delis, J. B. G., 455a Johns Road, Harewood, Christchurch. 8005

ZL3QV Smith, R. H., 76 Santa Maria Avenue, Mount Pleasant, Christchurch. 8008

ZL3QX Mayo, G. J. L., 9 Westerna Terrace, Christchurch. 8002

ZL3QY Belcher, E. W., 1 Hall Street, Cobden, Greymouth. 7801

ZL3QZ Daniels, F. J. H., Ngakawau, Westport. 7650

ZL3RA Riach, C. D., 25 Buffon Street, Waltham, Christchurch. 8002

ZL3RB Davis, A. W., Aylesbury Road, No 1 R.D., Christchurch. 8021

ZL3RC Signal, C. B., 8 Bridge Street, Temuka. 8752

ZL3RD Davey, D. R., 7 Westview Crescent, West Melton, R.D. 6, Christchurch. 8021

ZL3RE Bott, R. A., 9 Holmcroft Court, Cashmere, Christchurch. 8002

ZL3RF Dickey, C. N., 20 Todd Avenue, Christchurch. 8005

ZL3RG Roberts, G. R., 22 McBeath Avenue, Christchurch. 8002

ZL3RGA Gardiner, R., 85 Condell Avenue, Christchurch. 8005

ZL3RH Pumpa, P. G., Greendale Road, R.D. 1, Christchurch. 8021

ZL3RI Boyes, J. B., 217 Main South Road, Greymouth. 7801

ZL3RJ Hutton, B. G., 17 Manhire Street, Christchurch. 8002

ZL3RK Kirk, R. M. (Dr), 35 Tintern Avenue, Upper Riccarton, Christchurch. 8004

ZL3RL Tunnicliffe, D. N., P.O. Box 56-402, Dominion Road, Auckland. 1030

ZL3RM McKay, R. W., c/- United Airlines Operations (Fwd to Laxfo), P.O. Box 73-006, Auckland International Airport. 1730

ZL3RN Yeates, D. R., 69 St. Andrews Hill Road, St Andrews Hill, Christchurch. 8008

ZL3RO Walsh, G. J., 37 Edith Street, Fairfield, Dunedin. 9006

ZL3RPS Radio Preservation Society of NZ (Ferryhead) Inc, (Trustee ZL3BI), 269 Bridle Path Road, Christchurch. 8005

ZL3RQ Riordan, G. B., 25a Taylors Avenue, Christchurch. 8005

ZL3RR North Canterbury Amateur Radio Club, see Branch Directory

ZL3RS Campbell, D., 165a Foremans Road, Hornby, Christchurch. 8004

ZL3RT Rayner, L. A., 4 Elysium Court, 19 Aldridge Road, Ferndown, Dorset BH22 8LT, England

ZL3RU Bennett, R. G. T., 60 Kirkwood Avenue, Christchurch. 8004

ZL3RW Mackay, D. J., 22 Waipara Street, Cashmere, Christchurch. 8002

ZL3RX Thirkettle, R. J., P.O. Box 34-027, Fendalton, Christchurch. 8030

ZL3RY Clark, E. J., 25 Ben Nevis Drive, Russley, Christchurch. 8004

ZL3RZ King, S. P., 12 Nayland Street, Christchurch. 8008

ZL3SA Gibbs, R. A., 97 Leaver Terrace, North New Brighton, Christchurch. 8009

- ZL3SB** Riordan, A. A. C., 95 Crofton Road, Harewood, Christchurch. 8005
- ZL3SC** Shearman, G. D., 68 Proctor Street, Christchurch. 8005
- ZL3SD** Powell, M. B., 64 Jennifer Street, Bryndwr, Christchurch. 8005
- ZL3SE** Harvey, M. A., 1 Calamaras Street, Wakatu Heights, Nelson. 7001
- ZL3SF** Maloney, J. N., 31 Middlepark Road, Christchurch. 8004
- ZL3SG** Harbeck, A. D., McHughes Road, R.D. 2, Kaiapoi. 8252
- ZL3SH** Hardie, S. R., 245a Harewood Road, Christchurch. 8005
- ZL3SI** Little, G. W., 81A Banks Avenue, Christchurch. 8006
- ZL3SJ** Fraser, G. J., 206 Major Hornbrook Road, Christchurch. 8008
- ZL3SK** Patrick, T. L., 46 Sherborne Street, Christchurch. 8001
- ZL3SL** Leeming, D. S., 228 Maidstone Road, Avonhead, Christchurch. 8004
- ZL3SM** Graham, B. N., 230 Esplanade, Kaikoura. 8280
- ZL3SMO** May, Bryce, 156 Pages Road, Timaru. 8601
- ZL3SN** Oldham, J. E., 40 Russell Street, Westport. 7601
- ZL3SO** Kilkolly, J. W., 37 Haselden Street, Westport. 7601
- ZL3SP** Brookman, P. J., 361 Gardiners Road, Christchurch. 8005
- ZL3SQ** Hadfield, A. I., 42 Riverview Street, Christchurch. 8001
- ZL3SR** Webster, R. D., 4 Wynsfield Gardens, St Heliers, Auckland. 1005
- ZL3SS** Langrish, T. F., 36 Bowenvale Avenue, Christchurch. 8002
- ZL3SU** Orchard, P. J., P.O. Box 223, Greymouth. 7815
- ZL3SV** Watson, G. L., P.O. Box 262, Motueka. 7161
- ZL3SW** Carter, D. R., Mt Gay, Pleasant Point, R.D. 12, Timaru. 8772
- ZL3SY** Thomas, P. A., 270 Centaurus Road, Christchurch. 8002
- ZL3SZ** Dalrymple, D. L., 65 Frankleigh Street, Spreydon, Christchurch. 8002
- ZL3TA** Ritchie, M. V. H., 1/313 Estuary Road, South Brighton, Christchurch. 8007
- ZL3TAA** Fletcher, J. N., 7 Waiwera Place, Waiwera. 1240
- ZL3TAB** Hyde, I. E., 26 Aylmers Valley Road, Akaroa. 8161
- ZL3TAC** Collins, B. A., 133a Condell Avenue, Bryndwr, Christchurch. 8005
- ZL3TAF** Taege, B. S., 23 Holderness Place, Avonhead, Christchurch. 8004
- ZL3TAG** Cook, A. J., P.O. Box 5, Woodend. 8255
- ZL3TAH** Stevenson, M. A., 44 Patterson Terrace, Halswell, Christchurch. 8003
- ZL3TAI** Grandiek, J. N., 51 Trafalgar Street, Nelson. 7001
- ZL3TAJ** Gill, I. D. (Mrs), River Road, Greenpark, R.D. 2, Christchurch. 8021
- ZL3TAL** Harrison, K. B., 16 Arkwright Place, Halswell, Christchurch. 8003
- ZL3TAO** MacPherson, I. W., 10 Rhyll Place, Christchurch. 8005
- ZL3TAS** Prior, C. A., 128 Sisters Road, Parnassus. 8271
- ZL3TAT** Baker, E. J. A., P.O. Box 65, Lake Tekapo. 8770
- ZL3TAU** Carrell, D. W., 33 Ryeland Avenue, Christchurch. 8004
- ZL3TAY** Ross, M. J., 32 Zephyr Terrace, Governors Bay, R.D. 1, Lyttelton. 8033
- ZL3TAZ** Greer, R. B., 365 Armagh Street, Christchurch. 8001
- ZL3TB** Somerville, J. D., P.O. Box 2936, Christchurch. 8015
- ZL3TBB** Wormald, R. G., 247a Wairakei Road, Bryndwr, Christchurch. 8005
- ZL3TBC** Grenfell, A. D., 34 Massey Crescent, Christchurch. 8001
- ZL3TBD** Symonds, A. C., 19 Stiles Place, Burwood, Christchurch. 8006
- ZL3TBE** Pritchard, D. V., Hansens Road, R.D. 1, Kerikeri. 0470
- ZL3TBG** O'Neill, T. J., 89 Pages Road, Christchurch. 8006
- ZL3TBH** Hobbs, B. T., 10 Dobson Street, Timaru. 8601
- ZL3TBQ** Johnstone, D. E., 291 Burwood Road, Christchurch. 8009
- ZL3TBR** Black, D. R., 11 Epsom Avenue, Epsom, Auckland. 1003
- ZL3TBT** Lee, M. O., 260 Cashmere Road, Halswell, Christchurch. 8003
- ZL3TBU** Watson, A. N., 9 The Nook, Algies Bay. 1241
- ZL3TBV** Heazlewood, R., 182 Hawthornden Road, Christchurch. 8004
- ZL3TBZ** Barker, H. J. (Ms), 900 Lower Styx Road, Christchurch. 8009
- ZL3TC** Smith, Marjorie, 15 Ferry Road, Spring Creek, Blenheim. 7350
- ZL3TCA** Pope, S. K., 385 Pages Road, Aranui, Christchurch. 8007
- ZL3TCE** Cobb, P. B., 2 Weymouth Grove, Wainuiomata. 6008
- ZL3TCG** Deans-Syddall, J. M. (Mrs), P.O. Box 9, Kirwee. 8170
- ZL3TCJ** Croker, J. H. (Ms), c/- Waimangaroa Post, via Westport. 7650
- ZL3TCK** Sands, A. J., 3 Banks Place, Rangiora. 8254
- ZL3TCM** Ramsey, R. B., 31 Rollesby Street, Hoon Hay, Christchurch. 8002
- ZL3TCP** Parish, I. J., P.O. Box 24, Geraldine. 8751
- ZL3TCR** Gillman, Bev, 496 Tuahiwi Road, 1 R.D., Kaiapoi. 8252
- ZL3TCT** McCaw, R. C., 6 Farndale Place, Christchurch. 8004
- ZL3TCU** Duxbury, J. S., 51 Aorangi Road, Christchurch. 8005
- ZL3TCV** Garraway, W. A., 120 Warren Crescent, Hillmorton, Christchurch. 8002
- ZL3TCW** Standeven, E. R., 24 Brynley Street, Hornby, Christchurch. 8004
- ZL3TCX** Brewerton, T. R., 169 Buller Road, Reefton. 7853
- ZL3TDA** Shaw, Graham, P.O. Box 4376, Christchurch. 8015
- ZL3TDB** Milne, O. D., 12 Stanbury Avenue, Christchurch. 8002
- ZL3TDC** Thomson, R. Y., 6 Princes Street, Temuka. 8752
- ZL3TDD** Marks, J. W. J., 20 Dobson Street, Christchurch. 8002
- ZL3TDF** Smith, B. A., "Charodale", Old West Coast Road, R.D. 1, Christchurch. 8021
- ZL3TDH** Clark, N. L., 37 Radbrook Street, Christchurch. 8004
- ZL3TDI** Ingram, D. M. E., 51c Marshland Road, Christchurch. 8006
- ZL3TDK** Emmett, B. A., F1/504 Barbadoes Street, Christchurch. 8001
- ZL3TDL** Wright, D. J., 5 Oakhurst Place, Russley, Christchurch. 8004
- ZL3TDM** Harding, J. M., 15 Elm Grove, Christchurch. 8001
- ZL3TDN** Tait, J. K., 101a Nayland Street, Christchurch. 8008
- ZL3TDR** Smith, J. J., 10a Archer Street, Timaru. 8601
- ZL3TDS** Taylor, E. G., 335 Hills Road, Christchurch. 8001
- ZL3TDW** Hider, Denise, 12 White Street, Rangiora. 8254
- ZL3TDX** Woods, B. M., 76b Randolph Street, Christchurch. 8006
- ZL3TDY** Cavill, J. P., 36 Outram Grove, Kelson, Lower Hutt. 6009
- ZL3TDZ** Boyer, P. J. (Mrs), 25a Dillon Street, Blenheim. 7301
- ZL3TEO** Oakley, Elizabeth, 168c Moncks Spur Road, Redcliffs, Christchurch. 8008
- ZL3TET** Ellis, R. T., 34 Greenpark Street, Christchurch. 8002
- ZL3TEW** Wilson, E. T. (Ted), 24 Collins Street, Ashburton. 8300
- ZL3TFA** Hall, B. W., 27 John Street, Temuka. 8752
- ZL3TFC** Dalton, T. P., 12 Peckham Lane, Christchurch. 8006
- ZL3TFD** Rhodes, D., Rapaki, P.O. Box 44, Lyttelton. 8033
- ZL3TFG** Dawkes, R., 1/71 Aldwinds Road, Linwood, Christchurch. 8006
- ZL3TFI** Wright, B. A., 21 Koromiko Street, Christchurch. 8002
- ZL3TFJ** Lundy, R. J., 10 Alpers Place, Hillmorton, Christchurch. 8002
- ZL3TFK** Weir, R. G., 64a Selwyn Street, Somerfield, Christchurch. 8002
- ZL3TFM** MacFarlane, M. J., 35 Manor Place, Christchurch. 8005
- ZL3TFN** Wood, K. L. B., 126 Pikaere Street, Titahi Bay, Porirua. 6006
- ZL3TFQ** Dawkes, R. L., P.O. Box 14-012, Christchurch. 8030
- ZL3TFR** Smales, K. A., P.O. Box 7017, Hamilton East, Hamilton. 2032
- ZL3TFS** Soal, D. F., 13 Buckleys Terrace, Tinwald. 8330
- ZL3TFV** Brookes, B. R., 2 The Kilns, Christchurch. 8002
- ZL3TFW** Van Til, H. J., 6 Mulberry Lane, Redwood, Christchurch. 8005
- ZL3TFY** Tizzard, R. W., 9 Chevy Place, Hoon Hay, Christchurch. 8002
- ZL3TFZ** Harris, F. D. E. M. (Mrs), 343 Riccarton Road, Christchurch. 8004
- ZL3TG** Copland, G. M., 11 Peel Street, Christchurch. 8005
- ZL3TGB** Graham, J. C., 4 Ngaumata Road, Point Howard, Lower Hutt. 6008
- ZL3TGC** Clark, G. D., 38a Sneyd Street, Kaiapoi. 8252
- ZL3TGG** Groom, C. B. G., 18 Queens Avenue, Waikuku Beach. 8254
- ZL3TGM** Flecknoe, G. A., 6 Kyeburn Place, Christchurch. 8004
- ZL3TGN** Nalder, G., 111 Waller Street, Murchison. 7191
- ZL3TGP** Parkyn, P. R., 4 Witham Street, Hornby, Christchurch. 8004
- ZL3TGQ** Halverson, D. L., 49 Young Street, Wanganui. 5001
- ZL3TGR** Timewell, I. D., P.O. Box 706, Timaru. 8615
- ZL3TGS** Oliver, A. J., 2/32b Huntsbury Avenue, Christchurch. 8002
- ZL3TGU** Bissland, D. N., 12 Highgate Avenue, Christchurch. 8001
- ZL3TGV** Winslade, R. H., 15 Hunt Street, Timaru. 8601
- ZL3TGW** Hart, A. R. K., 9 Cracroft Terrace, Christchurch. 8002
- ZL3TGX** Henry, D. H., 34 Alexandra Street, Christchurch. 8001
- ZL3TGZ** Moyle, C. M. (Mrs), 68c Clyde Road, Christchurch. 8004
- ZL3THB** Cree, R. A., 18 Woolley Street, Christchurch. 8006
- ZL3THD** Claydon, R. C., 22 Wendover Street, Bishopdale, Christchurch. 8005
- ZL3THE** Bartlett, K. E., 24 Eastons Road, Westport. 7601
- ZL3THF** Higley, D. J., P.O. Box 102, Amberley. 8251
- ZL3THI** Wealleans, G. A., 37 Eglinton Street, Christchurch. 8007
- ZL3THJ** Philpott, J. W., 11 Wardour Mews, Avonhead, Christchurch. 8004
- ZL3THK** Errington, G. S., 9 Kiteroa Place, Cashmere, Christchurch. 8002
- ZL3THL** Hillary, D. N., 84 Isleworth Street, Christchurch. 8005
- ZL3THN** Price, G. D., 358 Breezes Road, Christchurch. 8007
- ZL3THO** Lauder, C. D., 118 Gemstone Drive, Parkdale, Upper Hutt. 6007
- ZL3THP** Platt, R. G., P.O. Box 59, Rolleston. 8150
- ZL3THQ** Corbett, R. K., P.O. Box 5162, Papanui, Christchurch. 8030
- ZL3THR** Harris, R. T., 289 Tancred Street, Ashburton. 8300
- ZL3THS** Taylor, P. J. (Ms), 41 Dunn Street, Somerfield, Christchurch. 8002
- ZL3THU** McMaster, B. T. R., 72 Fleete Street, Christchurch. 8006
- ZL3THX** Ferriss, A. E., 50 Marriner Street, Christchurch. 8008
- ZL3THZ** Barron, A. D., 124 St. James Avenue, Christchurch. 8005
- ZL3TI** Button, B. H., Longstaffs Road, R.D. 4, Christchurch. 8021
- ZL3TIB** Hely, M. O., R.D. 2, Christchurch. 8021
- ZL3TIC** Foubister, M. A., 94 Hoon Hay Road, Hoon Hay, Christchurch. 8002
- ZL3TIG** McNeill, R. G., 39 Kachthorne Road, Christchurch. 8002
- ZL3TIJ** Wilde, R. C., 1 March Street, Spring Creek, Blenheim. 7350

ZL3TIK

ZL3TIK Rodgers, P. N., 29 Porter Street, Ashburton. 8300
ZL3TIL Errington, J. G., 11 Paparua Street, Christchurch. 8005
ZL3TIM Van Garderen, J., 21 Greta Place, Christchurch. 8002
ZL3TIN Saville, P. G., 23a Tilford Street, Woolston, Christchurch. 8006
ZL3TIQ McCorkindale, D. R., 94 Clark Road, Hobsonville, Auckland. 1250
ZL3TIR Williams, P. S., 24 Newnham Terrace, Christchurch. 8004
ZL3TIW Platt, Bev, P.O. Box 59, Rolleston. 8150
ZL3TIX Stevens, J. B., Sandy Knolls Road, R.D. 1, West Melton, Christchurch. 8021
ZL3TIY Fyffe, N. B. H., 9 Menzies Street, Sumner, Christchurch. 8008
ZL3TJA Thompson, D. A. J., Fairview, R.D. 2, Timaru. 8621
ZL3TJB Shehadeh, J. M. (Miss), P.O. Box 29-116, Fendalton, Christchurch. 8030
ZL3TJC Briggs, N. E., 124 Riverside Drive, Whakatane. 3080
ZL3TJD Wilson, P. J., 111 Hornsey Road, Melrose, Wellington. 6003
ZL3TJH Robinson, P. J., 10 Takaha Drive, Christchurch. 8002
ZL3TJI Senior, G. J., Home Station, R.D. 2, Timaru. 8621
ZL3TJJ Ward, A. J., 178 Biddle Path Road, Christchurch. 8002
ZL3TJK Kerr, N. J. (Mrs), 359 A2 Mairehau Road, Christchurch. 8009
ZL3TJL Lye, R. D., 7 Cromer Place, Christchurch. 8007
ZL3TJM Dillon, G. A., P.O. Box 28-164, Beckenham, Christchurch. 8030
ZL3TJN Hills, M. P., Wilsons Road, R.D. 9, Feilding. 5600
ZL3TJO Sutherland, J. G. D., 12 Jocelyn Street, Christchurch. 8005
ZL3TJQ Potter, A. R., 1 Titoki Street, Christchurch. 8004
ZL3TJR Carter, R. S., 34 Cameron Street, Ashburton. 8300
ZL3TJS Whitfield, B. W., 101 Solesares Avenue, Mt Pleasant, Christchurch. 8008
ZL3TJT Nicol, J. R., 10 Lochee Street, Christchurch. 8004
ZL3TJU McConnell, M. M. (Mrs), Orchard Reserve, 111 Gardiners Road, Christchurch. 8005
ZL3TJV Osborne, K. W., 51 Barnes Street, Timaru. 8601
ZL3TJW Rickard, B. S., 37 Nelson Street, Ashburton. 8300
ZL3TJX Laughton, T. J., 12 Lancelwood Drive, Westlake, Christchurch. 8003
ZL3TJY Allan, S. E. (Mrs), Egans Road, R.D. 1, Rangiora. 8254
ZL3TJZ Hines, M. J., 34 Celia Street, Christchurch. 8008
ZL3TK Martin, D. F., 28 High Street, Greymouth. 7801
ZL3TKA Gumbrell, C. B., c/- 12 McEnroe Grove, Naenae, Lower Hutt. 6009
ZL3TKC Avery, F. E., 66 Mill Street, Westport. 7601
ZL3TKD Godfrey, C. Y. (Mrs), R. D. 2, Kaikoura. 8280
ZL3TKF Modillion, K. F. (Mrs), 11 Goya Place, Bishopdale, Christchurch. 8005
ZL3TKG Neill, R. N., 39 Ellesmere Crescent, Palmerston North. 5301
ZL3TKI Empson, T. M., 18 Takaha Drive, Cashmere, Christchurch. 8002
ZL3TKJ Forsythe, L. J., 65a East Belt, Lincoln. 8152
ZL3TKK Johnston, A. R., R.D. 11, Rakaiia. 8355
ZL3TKM Cox, A. R., 54 Hawkesbury Avenue, St Albans, Christchurch. 8001
ZL3TKO Griggs, M. J., 15 Harling Avenue, Hillmorton, Christchurch. 8002
ZL3TKP Gardiner, I. D., 29 Kellys Road, Mairehau, Christchurch. 8005
ZL3TKQ McInnes, G. W., 29 Harling Avenue, Hillmorton, Christchurch. 8002
ZL3TKR Dwyer, D. S., 10 Helmsdale Street, Christchurch. 8009
ZL3TKT Grant, L. J., C/- Mrs J. Stackhouse, 16 Clayton Road, Amberley. 8251
ZL3TKV Lang, A. N., 62 Rahera Street, Christchurch. 8002
ZL3TKW Williamson, I. S., 19 Ranelagh Terrace, Huntsbury, Christchurch. 8002
ZL3TKX Patterson, H. W., 33 Leinster Terrace, Lincoln. 8152
ZL3TL Paterson, M. S., 120 Hastings Street East, Christchurch. 8002
ZL3TLA O'Donnell, L. A., 39 Melton Street, Timaru. 8601
ZL3TLB Crawford, C. R., 524b Marine Parade, South New Brighton, Christchurch. 8007
ZL3TLC Bettridge, C. M. (Mrs), 81 Pine Avenue, South Brighton, Christchurch. 8007
ZL3TLD Dore, B. L., 66a Cottonwood Street, Parklands, Christchurch. 8009
ZL3TLE Weir, D. R. (Mrs), 64a Selwyn Street, Somerfield, Christchurch. 8002
ZL3TLG Steffensen, K. A., 10a Sefton Street, Belfast, Christchurch. 8005
ZL3TLJ McConnell, D. A., Orchard Grove, 111 Gardiners Road, Christchurch. 8005
ZL3TLN Digby, C. M. (Mrs), 4 Norfolk Street, Christchurch. 8005
ZL3TLP Walker, R. W., c/- 28 Sandown Crescent, Aranui, Christchurch. 8007
ZL3TLQ Harrall, E. D., 90 Gayhurst Road, Dallington, Christchurch. 8006
ZL3TLR Lee, P. B., 23a Salford Avenue, Christchurch. 8005
ZL3TLT James, K. D., 442 Pinehill Road, Dunedin. 9001
ZL3TLU Chapman, R. C., 16 Chardon Place, Waitakere, Auckland. 1008

ZL3TLV Chapman, B. K. (Mrs), 16 Chardon Place, Waitakere, Auckland. 1008
ZL3TLW Perry, S. J., 31 Fusillier Street, Hillmorton, Christchurch. 8002
ZL3TLX Vickers, L. W., 17 Walkers Road, Lyttelton. 8012
ZL3TLZ Bettridge, A. H. J., 81 Pine Avenue, Christchurch. 8007
ZL3TM Buchanan, W. A., 5 Fraser Street North, Runanga. 7854
ZL3TMA Bettridge, M. J., 2 Cook Street, Carters Beach, Westport. 7621
ZL3TMB Barnes, Mike, 129b Lyttelton Street, Spreydon, Christchurch. 8002
ZL3TMC Crosby, Mark, 16 Seymour Road, Hawarden. 8274
ZL3TMF Wilson, J. O., 15 Barnhill Crescent, Papakura. 1703
ZL3TMG Davidson, F. W., 24 Roberts Road, Christchurch. 8004
ZL3TMH Hutchison, B., Old West Coast Road, R.D. 6, Christchurch. 8021
ZL3TMI Wilson, D. A., 17 Bathurst Street, Ashburton. 8300
ZL3TMK Officer, B. C., 30 Peterhouse Street, Tawa. 6006
ZL3TML Attewell, D. R., 40 Buchanans Road, Sockburn, Christchurch. 8004
ZL3TMM Watson, P. M. J., 54 Kent Lodge Avenue, Christchurch. 8004
ZL3TMP Pringle, N. F., Gladstone Street, Hawarden. 8274
ZL3TMT Pot, M. J., 6 Te Kiteroa Grove, Churton Park, Wellington. 6004
ZL3TMR Waters, G. A. S., 1/56 Avimore Drive, Highland Park, Auckland. 1705
ZL3TMS Seay, M. G., 6 Armack Drive, R.D. 5, Christchurch. 8021
ZL3TMT Sullivan, B., 78 Rowses Road, Aranui, Christchurch. 8007
ZL3TMW Squire, S. A., 33 Balrudry Street, Avonhead, Christchurch. 8004
ZL3TMX Sutherland, D. M. (Mrs), 232 Weston Road, St Albans, Christchurch. 8005
ZL3TMY Payne, D. W., 60 Anglesea Avenue, Queenspark, Christchurch. 8009
ZL3TMZ Sutherland, B. S., 232 Weston Road, St Albans, Christchurch. 8005
ZL3TN Dowling, D. W., Fairview, R.D. 2, Timaru. 8621
ZL3TNC Andrew, E. D. B., 448b Harewood Road, Bishopdale, Christchurch. 8005
ZL3TNE Egan, P. D., 35 Oak Grove, Ashburton. 8300
ZL3TNG Hulston, G. F., 2 Dalkeith Lane, Belmont, Lower Hutt. 6009
ZL3TNI Sinclair, L. C., 28 Palmside Street, Spreydon, Christchurch. 8002
ZL3TNJ Davis, B., 40 Laing Crescent, Heathcote, Christchurch. 8002
ZL3TNK Von Biel, H. A., 149d Major Hornbrook Road, Christchurch. 8008
ZL3TNL Maunsell, P. B., 41 Stanton Crescent, Christchurch. 8002
ZL3TNN Hughes, Gail, 10 Bainton Street, Papanui, Christchurch. 8005
ZL3TNO Pearce, S. J., 11 Melford Close, Rangiora. 8254
ZL3TNQ Amtman, B. L., 3/17 Office Road, Merivale, Christchurch. 8001
ZL3TNS Clay, P. D., 5 Appleby Highway, Richmond, Nelson. 7002
ZL3TNT Fraser, Ann, P.O. Box 12, Waipara. 8270
ZL3TNV King, J. H., 45 Roberta Drive, Christchurch. 8002
ZL3TNY Brown, S. D., 78a Hackthorne Road, Christchurch. 8002
ZL3TNZ Gillick, K. J., 1/50 Shannon Place, Belfast, Christchurch. 8005
ZL3TO Godkin, R. W., 147 Avondale Road, Christchurch. 8007
ZL3TOA Gowers, R. J., P.O. Box 15, Hinds. 8351
ZL3TOB Berry, R. D. E., c/- Electrical & Electronic Engineering Dept., University Of Canterbury, Private Bag 4800, Christchurch. 8020
ZL3TOC Marshall, R. W., 19 Fraser Crescent, Twizel. 8773
ZL3TOD Robertson, C., 15 Wittys Road, Avonhead, Christchurch. 8004
ZL3TOF Warren, P. A., 313 Wainoni Road, Christchurch. 8007
ZL3TOG Smith, R. J., 1a Hawtrey Terrace, Johnsonville, Wellington. 6004
ZL3TOH Fordyce, A. A., 28 Meadow Street, Christchurch. 8005
ZL3TOI King, A. F., 2/363 Withells Road, Christchurch. 8004
ZL3TOJ Meyers, D. R., P.O. Box 14, Rangiora. 8254
ZL3TOL Gordon, R. A., 23 Harmans Road, Lyttelton. 8012
ZL3TON Roy, E., 108 Hills Road, Christchurch. 8001
ZL3TOO Sullivan, C., 14 Bidwell Place, Christchurch. 8002
ZL3TOP May, K., 30 Nikau Place, Timaru. 8601
ZL3TOT Foster, P. J., 5a Vancouver Crescent, Christchurch. 8006
ZL3TOV Martin, B. E., 1/32 Pirie Street, Mount Victoria, Wellington. 6001
ZL3TOW Kilgour, O. A., Okari Road, R.D. 2, Westport. 7621
ZL3TOY Kenton, B. A., 303 Selwyn Street, Addington, Christchurch. 8002
ZL3TOZ Hurst, D. W., 31 Wakanui Road, Ashburton. 8300
ZL3TP MacLean, A. G., 9 Horton Street, Pleasant Point. 8772
ZL3TPC Calder, P. A., c/- Postal Agency, Inangahua Junction. 7650
ZL3TPD Pitcaithly, D. J., 163 Wales Street, Halswell, Christchurch. 8003
ZL3TPE Obers, W. L. T., 154 Ross Street, Invercargill. 9501
ZL3TPG Sinclair, P. G., 1a Wherstead Road, Cashmere, Christchurch. 8002

ZL3TPI Parry, D. G., 26 Vanderbilt Place, Halswell, Christchurch. 8003
ZL3TPO Turnbull, P. D., 21 Earp Street, Johnsonville, Wellington. 6004
ZL3TPS Stewart, P. D., 12 Benmore Street, Timaru. 8601
ZL3TPT Thompson, B. N., 172 Kilmore Street, Christchurch. 8001
ZL3TPV Holland, D. J., 16 Maire Street, Tahunanui, Nelson. 7001
ZL3TPW Burdekin, B. W., 180 Huxley Street, Christchurch. 8002
ZL3TPY Fotheringham, J. P., 45 Wilkie Crescent, Naenae, Lower Hutt. 6009
ZL3TPZ Campbell, G. J., 23 O'Briens Road, Sockburn, Christchurch. 8004
ZL3TQ Agnew, G. A., 10 Robyn Place, Lincoln. 8152
ZL3TQC Graham, J. N., 121 Rongotai Crescent, Kilbirnie, Wellington. 6003
ZL3TQD Roxburgh, J. G., 13 Pound Road, Leeston. 8151
ZL3TQE Aitchison, M. S., 61 Longfellow Street, Christchurch. 8002
ZL3TQH Wiltshire, R., 25 Moreland Avenue, Papanui, Christchurch. 8005
ZL3TQJ Morrison, L. I., 82a Wansbeck Street, Oamaru. 8901
ZL3TQX Slatter, S. E., 125 Sumnervale Drive, Christchurch. 8008
ZL3TR Haynes, J. C., 26 Roosevelt Avenue, Christchurch. 8001
ZL3TRB Brace, A. J., 14 Queen Street, Westport. 7601
ZL3TRE Cleine, N. C., R.D. 2, Utopia Road, Westport. 7621
ZL3TRF Rathbun, F. J., 6 Palmerston Street, Greymouth. 7801
ZL3TRH Anderson, B. M., House No 3, Seaview Hospital, Hokitika. 7900
ZL3TRJ Spurdle, D. P., 22 Giles Place, Shirey, Christchurch. 8006
ZL3TRK Withers, N. C., 216b Sawyers Arms Road, Christchurch. 8005
ZL3TRL Parker, G. T., 4 Margot Lane, Christchurch. 8008
ZL3TRN Brammah, L., 31 Rata Street, Christchurch. 8004
ZL3TRQ Quantick, L. H. (Miss), 4 Ayers Street, Rangiora. 8254
ZL3TRR Nixon, H. E. (Mrs), 10 Dulles Place, Christchurch. 8005
ZL3TRS Moran, S. P., 38 Colesbury Street, Christchurch. 8005
ZL3TRT Sawyers, T., Cape Road, R.D. 2, Westport. 7621
ZL3TRW Powell, J., 65 White Street, Rangiora. 8254
ZL3TRX Hadler, D. J., Sandy Knolls Road, R.D. 1, Christchurch. 8021
ZL3TRZ Anderson, J. C., 191 West Belt, Rangiora. 8254
ZL3TSB Blanchard, A. J., 18 Roxburgh Street, Timaru. 8601
ZL3TSG Van Royan, G. H., Woodbury Road, R.D. 21, Geraldine. 8751
ZL3TSJ Cole, G. J. (Mrs), Grange Settlement Road, Temuka. 8752
ZL3TSM Miller, N. E. (Mrs), Whitewood Crescent, R.D. 5, Christchurch. 8021
ZL3TSP Phillips, S. J., 25 Woodlands Place, Bexley, Christchurch. 8007
ZL3TT Symes, A. C. O., 5 Gilwell Street, Christchurch. 8009
ZL3TTA Roe, T. A., Main Road, Riwaka, R.D. 3, Motueka. 7161
ZL3TTH Houlden, T. J., P.O. Box 16, Kaiapoi. 8252
ZL3TTJ Townsend, J. S., 50 Condell Avenue, Bryndwr, Christchurch. 8005
ZL3TTS Hayward, L. B., 20 De Havilland Street, Hornby, Christchurch. 8004
ZL3TTW Waters, B. M. T., 81b Eastern Terrace, Beckenham, Christchurch. 8002
ZL3TU Sharnock, M. A., 6 Ashby Place, Christchurch. 8005
ZL3TV Ching, W. M., 47 Leeston Street, Ashburton. 8300
ZL3TVA Hoving, J. P., 24 Royal Park Drive, Parklands, Christchurch. 8009
ZL3TVF Moller, Marion, 228 Dobson Street, Ashburton. 8300
ZL3TVL Uden, E. M., Clifford Road, R.D., Seddon. 7353
ZL3TVS Stutterfield, R. (Mrs), 138 Rutland Street, St Albans, Christchurch. 8005
ZL3TW Riley, T. R., 20 Rearsby Drive, Halswell, Christchurch. 8003
ZL3TWH Burrows, R. M., 25a Esperance Street, Christchurch. 8005
ZL3TWP Wells, M. E. (Mrs), 27 Samuel Street, Hoon Hay, Christchurch. 8002
ZL3TX Strong, W. S., 20e Hackthorne Road, Christchurch. 8002
ZL3TY McQuarrie, R. J., Weenink Road, Greymouth. 7801
ZL3TYA Yeates, A. J., 69 St Andrews Hill Road, Christchurch. 8008
ZL3TZ Rio, N. N., 14 Gunson Street, Ponsonby, Auckland. 1001
ZL3TZR Gilmour, C. M. L. (Ms), 34 Martin Avenue, Beckenham, Christchurch. 8002
ZL3TZY Cummings, R., 33 Waiwetu Street, Christchurch. 8005
ZL3UA Mulholland, F. S. T., 14 Penfold Square, P.O. Box 21, Leithfield Beach. 8251
ZL3UAB Chapman, P. J., F9/56 Hampshire Street, Aranui, Christchurch. 8007
ZL3UAC Crosby, A. A., 13 Princes Street, Waikari. 8276
ZL3UAD Woodfield, Alex (Mrs), 5 Karen Lane, Beckenham, Christchurch. 8002
ZL3UAM McDonald, A. M. (Mrs), Knights Road, R.D. 5, Christchurch. 8021
ZL3UAN Newell, D. A., 3 Plaskett Street, Reefton. 7853
ZL3UAR May, Aaron, 156 Pages Road, Timaru. 8601
ZL3UB Stevenson, H. H., 16 Wilsons Road, Christchurch. 8002
ZL3UBC Campbell, B. M., 4a Vincent Place, Opawa, Christchurch. 8002
ZL3UBS Allen, M. B., 208 Major Hornbrook Road, Christchurch. 8008

ZL3UBW Carran, P. S., 50 Bengal Drive, Christchurch. 8002
ZL3UC Eden, G. C., 41 Neville Street, Christchurch. 8002
ZL3UCB Lanacaster, C. B., 17 Eureka Street, New Brighton, Christchurch. 8007
ZL3UCC Cook, C. A., 188 Beach Road, North New Brighton, Christchurch. 8009
ZL3UCK Blanchett, C. E. L., 59 Shakespeare Street, Greymouth. 7801
ZL3UCL Lewer, C. J., 146 Sawyers Arms Road, Papanui, Christchurch. 8005
ZL3UCM Perrin-Smith, R. S., 1 Ida Street, Greymouth. 7801
ZL3UCP Thomas, A. L., 17 Stirling Drive, Greymouth. 7801
ZL3UCU Wilson, G. M., 48 Buchanan Road, Sockburn, Christchurch. 8004
ZL3UD McCannachie, Margaret, Downs Road, R.D. 2, Darfield. 8172
ZL3UDB Boyes, D. G., 4 Monkton Place, Christchurch. 8006
ZL3UDH Hetherington, D. J., 43 Otupua Road, Timaru. 8601
ZL3UDR Robb, D. W., 12 Guinness Crescent, Burnside, Christchurch. 8005
ZL3UE Prattley, R. H., Ellesmere Road, R.D. 2, Christchurch. 8021
ZL3UEO Jenkins, R. C., 353 Lake Kaniere Road, Hokitika. 7900
ZL3UF Prue, B. O., 111 Union Street, New Brighton, Christchurch. 8007
ZL3UFM Chilton, N. J., 71 Charles Street, Rangiora. 8254
ZL3UFO Fraser, A. J., P.O. Box 12, Waipara. 8270
ZL3UFS Steegh, F. P., 163 Rutherglen Road, Rutherglen, Greymouth. 7821
ZL3UFT Allan, D. T., c/- P.D.C. Counter, Rolleston. 8150
ZL3UFY Hart, D. M., 270 Lake Terrace Road, Burwood, Christchurch. 8006
ZL3UGC Cook, G. J., 33 Normanby Street, Christchurch. 8005
ZL3UGM Melville, G. B., 167a Ashgrove Terrace, Spreydon, Christchurch. 8002
ZL3UGY Briggs, R. D. (Mrs), 32 Fifth Street, Cobden, Greymouth. 7801
ZL3UHH Chu, Y. F., 469 Madras Street, Christchurch. 8001
ZL3UI Meredith, F. P. R., 6 Raymond Street, Bromley, Christchurch. 8006
ZL3UIM Watson, S. (Mrs), 59 Roundtree Street, Christchurch. 8004
ZL3UJL Long, D. T., 334 Papanui Road, St Albans, Christchurch. 8005
ZL3UJM McCaughtry, J. M., 35 Broadhaven Crescent, Queenspark, Christchurch. 8009
ZL3UJS Spooner, J. F., 15 Deal Street, Kaikoura. 8280
ZL3UJW Pickering, J. W., 11 Flower Street, Christchurch. 8005
ZL3UJX Boyes, A. D. (Miss), 217 Main Road, Greymouth. 7801
ZL3UKG Glen, K. F., 32 Fifth Street, Cobden, Greymouth. 7801
ZL3UL Smith, A. F., 39 Wesley Street, Kaiapoi. 8252
ZL3ULP Savage, Linda, 16 Seymour Road, Hawarden. 8274
ZL3ULW Willum, Lem, 97 Morcos Road, Waiu. 8275
ZL3UMT Turner, Morry, Sefton, 2 R.D., Rangiora. 8254
ZL3UN Marshall, L., 20 Osborne Grove, Ashburton. 8300
ZL3UOD Smith, W. S., 30 Armitage Street, Bishopdale, Christchurch. 8005
ZL3UOK May, Stuart, 156 Pages Road, Timaru. 8601
ZL3UP McNicholl, M. W., 4 Corfe Street, Christchurch. 8004
ZL3UPB Billens, P. A., 1/109 Wilsons Road, St Martins, Christchurch. 8002
ZL3UPH Lamble, R. P., 144 Queen Street, Westport. 7601
ZL3UPM Morgan, P. J., 88 Westholme Street, Christchurch. 8005
ZL3UPP Power, P. J. T., The Peaks, R.D., Hawarden. 8274
ZL3UPS Scott, Patrick, c/- Postshop, Waikari. 8276
ZL3UPU Power, Jan, The Peaks, R.D., Hawarden. 8274
ZL3UR South Canterbury NZART (Inc.), see Branch Directory
ZL3URJ Crozier, R. J., Oparara, R.D. 3, Karamea. 7650
ZL3USA May, A. P., 30 Nikau Place, Timaru. 8601
ZL3USF Wells, Kelvin, 12 White Street, Rangiora. 8254
ZL3USM Manson, S. B., 138 Hoon Hay Road, Christchurch. 8002
ZL3UT Hartley, D., 23 Wellington Street, Linwood, Christchurch. 8001
ZL3UU Gordon, M., 3 Rydal Street, Christchurch. 8002
ZL3UUR Halliday, J. E. (Mrs), 55 Britannia Street, North New Brighton, Christchurch. 8009
ZL3UUS Halliday, J. C., 55 Britannia Street, Christchurch. 8009
ZL3UV Coles, L. F., 232 Shortland Street, Christchurch. 8006
ZL3UW Conroy, H., 51 Bellbrook Crescent, Shirley, Christchurch. 8001
ZL3UX Vincent, L. L., Lismore, R.D. 5, Ashburton. 8300
ZL3UXG Ives, B. A., 205b Springfield Road, St Albans, Christchurch. 8001
ZL3UXP Boyes, K. M. (Mrs), 217 Main Road, Greymouth. 7801
ZL3UXT MacKley, G. D. J., P.O. Box 7279, Sydenham, Christchurch. 8035
ZL3UXZ Wright, N. J. (Mrs), 38 Seadown Road, Washdyke, Timaru. 8602
ZL3UY Brown, A. G., 355 Pine Avenue, South Brighton, Christchurch. 8007
ZL3UYH Codling, R. D., 6 Weenink Road, Greymouth. 7801
ZL3UZ McKenzie, C. D., 17 Hulverstone Drive, Christchurch. 8007

ZL3VA

ZL3VA Williams, D. T., 13 Liggins Street, Burwood, Christchurch.
8006
ZL3VAA Orchard, A. P., 53a Joyce Crescent, Postal: P.O. Box 105,
Greymouth. 7815
ZL3VAB Orchard, J. (Mrs), 53a Joyce Crescent, P.O. Box 223,
Greymouth. 7815
ZL3VAH Blanchard, H. E. G. (Mrs), 37 Reynolds Avenue,
Bishopdale, Christchurch. 8005
ZL3VAL Boote, V. Z. (Ms), 8 Hinton Road, Karoro, Greymouth. 7821
ZL3VAM Brook, P. C., 33 Martyn Street, Rangiora. 8254
ZL3VAN Tapp, H. L. (Ms), 8 Kitchener Place, Opawa, Christchurch.
8002
ZL3VAP Petersen, V. A. (Mrs), 51 Derby Street, Westport. 7601
ZL3VAS Stephens, L. C. (Ms), 78 Brougham Street, Westport. 7601
ZL3VAT Axford, B. R., Omoto Valley Road, Greymouth. 7801
ZL3VB Winter, D., 8 Baretta Street, Christchurch. 8002
ZL3VC McLaughlin, P. T., 42 Domett Street, Westport. 7601
ZL3VE Greymouth No.36 (A.T.C.) Squadron Radio Club, Army Hall,
Gresson Street, P.O. Box 78, Greymouth. 7815
ZL3VG Burling-Claridge, J. A., 4 Coventry Street, Christchurch.
8001
ZL3VI Melhuish, B. J., 34 St Andrews Hill Road, Christchurch.
8008
ZL3VIP McIsaac, Ivan, "The Shire", Powells Road, Oxford. 8253
ZL3VJ MacGeorge, A. A. G., 1 Pages Road, Timaru. 8601
ZL3VJH Hughes, J. R., 128 Preston Road, Blaketown, Greymouth.
7801
ZL3VJS Streeter, J. E., 14 Maltby Avenue, Timaru. 8601
ZL3VJX Milligan, T. J., 218 Condell Avenue, Bryndwr, Christchurch.
8005
ZL3VK Lawrence, J. E., 25 Andrew Street, Timaru. 8601
ZL3VL Uden, B. G. (Mrs), Clifford Road, Hauwai, R.D., Seddon.
7353
ZL3VLF Briggs, D. J., Coast Road, Barrytown, via Greymouth. 7850
ZL3VLJ Melse, J., P.O. Box 304, Greymouth. 7815
ZL3VM Wilson, D. W. T., 18 Turton Street, Ashburton. 8300
ZL3VN Bradley, J. N., 169 Weston Road, Christchurch. 8005
ZL3VNB Bateman, Nelson, 44 Jollies Pass Road, Hanmer Springs.
8273
ZL3VO Elder, J., 30 Maling Street, Christchurch. 8006
ZL3VP Bradshaw, Gareth, 159 Ashgrove Terrace, Christchurch.
8002
ZL3VQR Ramsay, Irene, 28 Cornwall Terrace, Balcairn, R.D. 2,
Rangiora. 8254
ZL3VR McMaster, Anne, 8 Greens Road, R.D. 1, Kaiapoi. 8252
ZL3VS Uden, B. G., Clifford Road, R.D., Seddon. 7353
ZL3VT Vasta, A. I., 13 Kaka Road, South Bay, Kaikoura. 8280
ZL3VTV Moore, T. D., 18 Geraldo Place, Russley, Christchurch.
8004

ZL3VV Christchurch West Amateur Radio Club, see Branch
Directory

ZL3VW Winskill, I. E., Caverhill, No 1 R.D., Cheviot. 8271
ZL3VX Parry, R. I., 18 Sunvale Terrace, Christchurch. 8002
ZL3VY Dixon, A. P., 16 Kildare Terrace, Lincoln. 8152
ZL3VYL O'Malley, M. J. (Mrs), 72 Crofton Road, Christchurch. 8005
ZL3VZ Paterson, A. J., 52 Cavendish Road, Christchurch. 8005
ZL3WA Allen, R. W., 11 Cheam Street, Dallington, Christchurch.
8006
ZL3WAM Wilson, A. M. (Mrs), c/- 9 Archer Place, Carters Beach,
Westport. 7621
ZL3WC Reeves, N. J., Little River Hotel, Highway 75, Little River.
8162
ZL3WCB Bayley, C. D., 8 Cressey Terrace, Lyttelton. 8012
ZL3WE Longson, H. J. O., 21 Kinnaird Place, Christchurch. 8002
ZL3WG Baird, J. F., 11 Aynsley Terrace, Christchurch. 8002
ZL3WH St. Andrews College Radio Club, (Trustee: ZL3RJ), Papanui
Road, Christchurch. 8005
ZL3WI Wilkinson, J. F., Le Bons Bay, R.D., Akaroa. 8161
ZL3WIK Wicksteed, G. J., 2/9 Sherbourne Street, St Albans,
Christchurch. 8001
ZL3WJ Young, W. H., Unit 6, Bishop Selwyn Retirement Home,
350 Selwyn Street, Christchurch. 8002
ZL3WK Martin, E. (Mrs), 867 Ferry Road, Woolston, Christchurch.
8002
ZL3WKT Allan, K. E. (Miss), Egans Road, R.D. 1, Rangiora. 8254
ZL3WL O'Connell, G. E., 31 Murray Street, Greymouth. 7801
ZL3WM Oliver, J. A., 44 Main Road, P.O. Box 22, Tai Tapu. 8150
ZL3WMD Dowle, W. M., Makura, Goose Bay, R.D. 2, Kaikoura. 8280
ZL3WN Askey, G., 106 North Avon Road, Christchurch. 8001
ZL3WO Welsh, L. D., 18 Woodlands Place, Christchurch. 8007
ZL3WP Buller High School Radio Club, 51 Derby Street, Westport.
7601
ZL3WPS Semmens, Warren, 53 White Street, Rangiora. 8254
ZL3WPT McLaughlin, Kim, 42 Domett Street, Westport. 7601
ZL3WQ Mackey, C. J., 1 Camp Street, Ahaura. 7850
ZL3WR Martin, V. E., 867 Ferry Road, Woolston, Christchurch. 8002
ZL3WRA Johnston, R. A. (Miss), 2 Waitaki Street, Bexley,
Christchurch. 8007
ZL3WS Tombling, F., 10 Crofton Road, Christchurch. 8005
ZL3WU Wright, A. F., 65 Ludstone Road, Kaikoura. 8280
ZL3WV Rigby, F., c/- "Montana", Domain Road, Oxford. 8253
ZL3WW Buckingham, P. J., 27c Sarsfield Street, Southbridge. 8150
ZL3WX Smillie, B., 19 Greenfield Place, Christchurch. 8005
ZL3WY Yeates, J. M. (Mrs), 69 St Andrews Hill Road, St Andrews
Hill, Christchurch. 8008
ZL3ZZZ McDonald, D. M., Knights Road, R.D. 5, Christchurch. 8021

ZL4 CALLSIGNS

ZL4AA Otago Branch NZART (Inc.), see Branch Directory
ZL4AAA Cooper, R. B., P.O. Box 330, Mangonui. 0557
ZL4AAB Watson, J., 73 Forfar Street, Mosgiel. 9007
ZL4AAK Devereux, R. L., Daniels Road, Kingsdown, R.D. 1, Timaru. 8621
ZL4AB Gray, H. A., 102 Brownston Street, Wanaka. 9192
ZL4AC Lowe, A. F., 287 Barrow Street, Bluff. 9503
ZL4AD Cook, B. J., 24 Bayfield Road, Andersons Bay, Dunedin. 9001
ZL4AE Wesley, I. C., Ballantrae Place, Merrilands, New Plymouth. 4601
ZL4AF Falconer, A. E., P.O. Box 214, Gore. 9700
ZL4AG Boshier, R. F., 30 Aytoun Drive, Glenfield, Auckland. 1310
ZL4AH Scudamore, E. G., "Fairview", Totness Street, Green Island, Dunedin. 9006
ZL4AI Shore, K. H., 1 Upland Street, Dunedin. 9001
ZL4AK Dowman, W. F., R.D. 54, Kimbolton, Fielding. 5600
ZL4AL Eastern Southland Branch NZART (Inc.), see Branch Directory
ZL4AM Blair, J. G. H., 5 Merrie Creek Road, Clinton. 9252
ZL4AN Shaw, M. Y., c/- Houhora Motor Camp, R.D. 4, Kaitaia. 0500
ZL4ANN Judson, Ann M., P.O. Box 2, Te Puke. 3071
ZL4AO Allan, A. N., Charlton, No 4 R.D., Gore. 9700
ZL4AP Smith, R. C., 112 Kildare Street, Invercargill. 9501
ZL4AQ Whyte, R. A., Waimumu, R.D. 4, Gore. 9700
ZL4AR Cole, R. S., 46 Walton Park Avenue, Fairfield, Dunedin. 9006
ZL4AS Gray, L. C., "Graylea", Stony Creek, R.D. 2, Balclutha. 9200
ZL4AT Treweek, C. A. (Mrs), 576 Herbert Street, Invercargill. 9501
ZL4AU Ernst, R. W., "Hollypine", Roslyn Bush Road, R.D. 2, Invercargill. 9521
ZL4AV Christie, G. A., 37 Garnet Street, Gore. 9700
ZL4AW Pickford, W. J., P.O. Box 491, Invercargill. 9515
ZL4AX Sandford, H. D., P.O. Box 12, Birchleigh Village, Mosgiel. 9032
ZL4AY McLeod, J. H., 81 Oreti Road, Otatara, R.D. 9, Invercargill. 9521
ZL4AZ Sidey, T. K. S., 16 Tolcarne Avenue, Dunedin. 9001
ZL4AZL Wairau, J. A., P.O. Box 25, Palmerston. 9061
ZL4BA Jones, G. L., 171 Main Road, Fairfield, Dunedin. 9006
ZL4BB Williamson, T. J., Yacht Capella, P.O. Box 25-111, St Heliers, Auckland. 1130
ZL4BC Ferris, J. L., 7 Peterson Place, Bridge Hill, Alexandra. 9181
ZL4BD Helean, F. P., 3 Passmore Crescent, Maori Hill, Dunedin. 9001
ZL4BF Smith, L. K., 114b Te Hono Street, Maungatapu, Tauranga. 3001
ZL4BG Mitchell, J. R., 49 McKerrow Street, Dunedin. 9001
ZL4BH East Otago High School Radio Club, (Trustee: ZL4FI), P.O. Box 58, Palmerston. 9061
ZL4BI Caldwell, J., 54 Brydone Street, Edendale, Invercargill. 9752
ZL4BJ Wickens, J. R., 9 Northfield Avenue, Opoho, Dunedin. 9001
ZL4BL Millar, T. E., 64 Martin Road, Fairfield, Dunedin. 9006
ZL4BM McCallum, R. H., Ashley Downs, R.D., Clinton. 9252
ZL4BN Collett, D. K., 28 Glencairn Road, Twizel. 8773
ZL4BO Jackson, V. R., Milton Park, R.D. 1, Invercargill. 9521
ZL4BP Collett, W. G., 35 Wharfedale Street, Macandrew Bay, Dunedin. 9003
ZL4BR Thompson, H. G., 47 Forth Street, Mataura. 9753
ZL4BS Aldridge, J. T., 87 Trevors Road, Ashburton. 8300
ZL4BU Stephens, R. D., 72 Wilfrid Street, Invercargill. 9501
ZL4BV McConnell, J. R., F4/39 Melbourne Street, Invercargill. 9501
ZL4BW Williamson, B. C., Melmore Terrace, Cromwell. 9191
ZL4BX Anderson, J. L., 757 Brighton Road, Brighton, Dunedin. 9051
ZL4BY Jenner, M. G., 34 Marion Street, Hoon Hay, Christchurch. 8002
ZL4BZ Eve, C. R., 181 Fairway Drive, Kamo, Whangarei. 0101
ZL4CA Williamson, A. E., Leicester Street, Hampden. 8950
ZL4CC Checketts, C. V. (Mrs), 21 Highfield Terrace, Invercargill. 9501
ZL4CD Dimmock, C., 92 Exmouth Street, Invercargill. 9501
ZL4CF McLaren, A. D., 16 Melbourne Street, South Dunedin. 9001
ZL4CG Rackley, A. M., 36 Craig Hendry Street, Green Island, Dunedin. 9006
ZL4CH Spry, W. D., 6 Clementine Lane, Christchurch. 8008
ZL4CI Stronach, N., 78 View Street, Manapouri. 9660
ZL4CJ O'Cain, P. J., Flat 1, 234 Barrington Street, Spreydon, Christchurch. 8002
ZL4CJS Staynes, C. J., 2 Crewe Street, Mornington, Dunedin. 9001
ZL4CK Wark, A. J., 8b Grassmere Road, Papanui, Christchurch. 8005
ZL4CM Martin, A. J. T., 8 Lark Street, Oamaru. 8901
ZL4CO Smith, J. D., P.O. Box 98, Alexandra. 9181
ZL4CR Middleton, C. E., 36 Green Street, Mosgiel. 9007

ZL4CT Southland Boys' High School Radio Club, (Trustee: ZL4LX), 215 Herbert Street, Invercargill. 9501
ZL4CU Dudley, G. J., Pomona Road, R.D. 6, Invercargill. 9521
ZL4CV McKenzie, J., 2/52 Fitzherbert Street, Alicetown, Lower Hutt. 6009
ZL4CW Barker, W. G., 30 Kowhai Avenue, Invercargill. 9501
ZL4DB Browne, D. J., 23 Hayle Street, Oamaru. 8901
ZL4DC Cambridge, D. A. H., R.D. 2, Queenstown. 9197
ZL4DD Van Veen, H. M. G., 161 Evans Street, Opoho, Dunedin. 9001
ZL4DF MacDonald, V. E., 5 Perth Street, Mosgiel. 9007
ZL4DG Wolf, W. G. W., 66 Mein Street, Newtown, Wellington. 6002
ZL4DI Bain, C. R., 24 McKerrow Street, Waverley, Dunedin. 9001
ZL4DJ Baird, R. A., 87 Ventry Street, Alexandra. 9181
ZL4DK Mulder, D. J., P.O. Box 396, Alexandra. 9181
ZL4DM Morseth, D. J., 140 Blacks Road, Dunedin. 9001
ZL4DN Sharp, J. R., 72a Bay View Road, South Dunedin. 9001
ZL4DP Ewens, W. S., 215 Broughton Street, Gore. 9700
ZL4DQ Maslen, I. A., 62 Chambers Street, Dunedin. 9001
ZL4DR Irving, J. T., 28 King Street, Mosgiel. 9007
ZL4DRB Bowie, D. R., 1020 George Street, Dunedin. 9001
ZL4DT Preddy, S. G., 105 Glenross Street, Dunedin. 9001
ZL4DU Stiglich, C. A., 58 Argyle Street, Mornington, Dunedin. 9001
ZL4DV Richards, P. D., 18 Holyhead Street, Outram. 9055
ZL4DW Babington, A. M., 45 Thomson Street, Invercargill. 9501
ZL4DX Anstice, S. R., 293 York Place, Dunedin. 9001
ZL4DY Daniel, E. H., 4 Reddecliffe Crescent, Ashburton. 8300
ZL4DZ Willetts, N. E., 23 Yarmouth Street, Balclutha. 9200
ZL4FA Spittle, B. J., 17 Pioneer Crescent, Helensburgh, Dunedin. 9001
ZL4FC Dominey, R. J., 67 King Street, Timaru. 8601
ZL4FD Hedge, H. G., 1/6b Sunnynook Road, Forrest Hill, Auckland. 1310
ZL4FE McConnachie, M. J., Joseph Street, R.D. 1, Taieri Mouth, Brighton, Otago. 9051
ZL4FF Gillies, I. B., 7 Duncraig Street, Invercargill. 9501
ZL4FG Russell, W. J., 106 King Street, Invercargill. 9501
ZL4FH Hall, J. N., 8 Watkin Street, Pine Hill, Dunedin. 9001
ZL4FI Askin, M. G., Moeraki, R.D. 2, Palmerston. 9061
ZL4FJ Austin, F. J., 8 Dunblane Street, Dunedin. 9001
ZL4FK Fisher, K. G., 7 Nepal Place, Christchurch. 8005
ZL4FL Farquharson, D. A., 134 Martin Road, Fairfield, Dunedin. 9006
ZL4FM Wilden, A. J., 19 Mooltan Street, Dunedin. 9001
ZL4FOX Kindt, B., R.D. 2, Waitati, Dunedin. 9060
ZL4FP McLeod, R. J., 134 Bay View Road, Dunedin. 9001
ZL4FR Jeromson, W. J., 196 Highcliff Road, Dunedin. 9001
ZL4FS Faulkner, D. N., 40 Wymer Terrace, Hamilton. 2001
ZL4FU Johnson, D. W. A., c/- 22 Huia Street, Rotorua. 3201
ZL4FV Willoughby, J. R., 116 Regent Street, Invercargill. 9501
ZL4FX O'Reilly, P. R., 60 Surrey Street, Dunedin. 9001
ZL4FY Pert, P. E., P.O. Box 6181, Dunedin North. 9030
ZL4FZ Smart, R. G., 26 Olive Street, Christchurch. 8001
ZL4GA Homer, G. C., 5 Conway Street, Macandrew Bay, Dunedin. 9003
ZL4GC Shand, T. J., 27 Riccarton Road, East Taieri, Mosgiel. 9007
ZL4GD Wilkey, T. G., 68 Marine Parade, Bluff. 9503
ZL4GE Hurring, C. J., 1a Belmont Lane, Dunedin. 9001
ZL4GF Balan, S. C., 45a Brandon Road, Glen Eden, Auckland. 1007
ZL4GG Boddy, K. H., 47 Newcastle Street, Clyde. 9180
ZL4GH Huberts, G. H., 46 Lysnar Street, Wainui Beach, Gisborne. 3801
ZL4GJ Service, T. R., 5 Bremridge Place, Hamilton. 2001
ZL4GK Colvin, L. J., 43 Riverside Road, Gisborne. 3801
ZL4GL Gilder, N. J., 37 Pomona Road, Gore. 9700
ZL4GM Ellis, D. N., 82 Rocks Highway, Riverton. 9654
ZL4GO Thomas, M. E., 27 Stirling Crescent, Mosgiel. 9007
ZL4GP McCutcheon, M. C., 145 Tarbert Street, Alexandra. 9181
ZL4GQ Southland Branch NZART (Inc.), see Branch Directory
ZL4GSW Whyte, G. S., P.O. Box 36, Portobello. 9030
ZL4GT Skinner, L. C., 36 Daniels Road, Redwood, Christchurch. 8005
ZL4GU Brentwood, P. L., Slopehill Road, R.D. 1, Queenstown. 9197
ZL4GV Wilkey, D. G., 2/30 Simkin Avenue, Glen Innes, Auckland. 1006
ZL4GW McDonald, B. N., 45 Goodman Street, Windsor, Christchurch. 8006
ZL4GY Wills, M. E., 181 Wilton Street, Rosedale, Invercargill. 9501
ZL4HA Young, B. S., 9 Crescent Street, Purakanui, R.D. 1, Port Chalmers. 9030
ZL4HC Waters, M. J., 6 Barling Street, Macandrew Bay, Dunedin. 9003
ZL4HF Kindon, H. A. J., 10 Treffers Avenue, Rangiora. 8254
ZL4HG McNeill, S. E. R., 86 Waddington Drive, Lower Hutt. 6009
ZL4HI Bruce, F., 1 Croydon Place, Kamo, Whangarei. 0101
ZL4HK McNaught, R. G., 217 Princess Street, Invercargill. 9501

ZL4HL

ZL4HL Smirk, A. H. C., 76 Cannington Road, Maori Hill, Dunedin. 9001

ZL4HM Whelan, M. L., 142 West Street, Invercargill. 9501

ZL4HO Sutton, K. E., 97 Grey Street, Invercargill. 9501

ZL4HP Rait, B. G., 42 Morton Street, Invercargill. 9501

ZL4HQ Williams, J. C., 143 Albert Street, Invercargill. 9501

ZL4HR Nisbet, G. J., 33 Sutcliffe Street, Dunedin. 9001

ZL4HS Marsh, W. J., 34 Fair View Terrace, Sawyers Bay, Dunedin. 9008

ZL4HT Powley, D. M. L., 82 Catherine Crescent, Newlands, Wellington. 6004

ZL4HW Robertson, K. W., 482 Herbert Street, Invercargill. 9501

ZL4HY Baxter, P. M. (Mrs), 456 Peninsula Road, Kelvin Heights, Queenstown. 9197

ZL4IA Baker, J. C., P.O. Box 16, Wanaka, Central Otago. 9192

ZL4IB Williams, R. F., c/- F. L. Williams, 12a Stuart Street, Levin. 5500

ZL4IC Cockeram, M. R., 126 Argyle- Otahuti Road, R.D. 4, Invercargill. 9521

ZL4IE Mason, J. A., 29 Cannington Road, Maori Hill, Dunedin. 9001

ZL4IF Cameron, L. C., c/- Mrs Chaney, 9 Wymouth Street, Fairton, R.D., Ashburton. 8300

ZL4IG Fox, A. R. E., 39 Links View Drive, Omokoroa R.D. 2, Tauranga. 3021

ZL4II Holleben, K. W., Irvine Road, 2 R.D., Dunedin. 9021

ZL4IK Emble, C. R., 47 Barr Street, Dunedin. 9001

ZL4IM Norton, J., c/- Private Bag, Pukerau, Southland. 9700

ZL4IN Faulkner, W. E., 2b Onslow Street, Gore. 9700

ZL4IO Malkin, Melva, 4/412w Avenue Road, Hastings. 4201

ZL4IQ Knowles, D. C., 28 Rata Road, Twizel. 8773

ZL4IS Smirk, B. A., 68 Cannington Road, Maori Hill, Dunedin. 9001

ZL4IT Savers, R. N., 70 Preston Crescent, Dunedin. 9001

ZL4IX Hasler, D. G., 10 Meon Street, Oamaru. 8901

ZL4IY Collie, D. B., 16 Iona Court, Invercargill. 9501

ZL4IZ Jeffery, I. W., 7 Point Bush Road, Waimate. 8791

ZL4JA Birse, K. C., 14 Martbert Crescent, Christchurch. 8005

ZL4JC McLennan, Elizabeth, P.O. Box 6394, Dunedin North. 9030

ZL4JD Dudley, J. T., 11 Fraser Street, Walkiwi, Invercargill. 9501

ZL4JE Elliot, J., F28/95 Victoria Road, Dunedin. 9001

ZL4JF South Otago Branch NZART (Inc.), see Branch Directory

ZL4JG Gilchrist, Jeanne, 37 Roy Crescent, Concord, Dunedin. 9006

ZL4JH Harrow, J. C., 529 Tweed Street, Invercargill. 9501

ZL4JJ Ferris, R. J., 269 Stokes Valley Road, Stokes Valley. 6008

ZL4JL Stewart, R. D., 4 Arawa Street, Gore. 9700

ZL4JM Richardson, J., 87 Newcastle Street, Clyde. 9180

ZL4JN Haig, A. V., 43 Melbourne Street, Dunedin. 9001

ZL4JO Maley, G. K. (Mrs), Newhaven, R.D. 1, Owaka. 9251

ZL4JP McKenzie, G. A., Waiparu, No 7 R.D., Gore. 9700

ZL4JQ Torrance, A. M., 16 Lupton Street, P.O. Box 24, Waverley. 5182

ZL4JR Rait, Janet, Longwood, R.D. 1, Riverton. 9654

ZL4JS Stonehouse, R. P. M., c/- 56 Leith Street, Invercargill. 9501

ZL4JT Jennings, J. T., 15 Coolock Street, Dunedin. 9001

ZL4JU Middleton, C. H., Little Road, R.D. 1, Queenstown. 9197

ZL4JW Watson, R. J., P.O. Box 66, Wakatipu, Dunedin. 9195

ZL4JX Rait, R. J. (Miss), c/- Barry Rait, 42 Morton Street, Invercargill. 9501

ZL4KB Gearing, W. J., Felldene Farm, R.D. 2, Wakefield, Nelson. 7181

ZL4KC Air Training Corps Radio Club No. 12 Invercargill Squadron, (Trustee: ZL4OH), Army Hall, Victoria Avenue, Invercargill. 9501

ZL4KF France, K. N., Artherton, R.D. 1, Gore. 9700

ZL4KH Shine, D. H. J., 11 Northview Crescent, Roslyn, Dunedin. 9001

ZL4KJ Robertson, D. C., 45 Maitland Street, Invercargill. 9501

ZL4KM Craig, A. J., 71 Mackworth Street, Christchurch. 8006

ZL4KN Findlater, R. B., Neva Street, Fortrose, R.D. 5, Invercargill. 9521

ZL4KO Williams, T. J., 8 Rob Roy Lane, Wanaka. 9192

ZL4KP Cochran, W. G., 19 Centennial Avenue, Balclutha. 9200

ZL4KR Pearce, A. M., 173 Helensburgh Road, Dunedin. 9001

ZL4KT Waring, D., 28 Kilarney Street, P.O. Box 118, Waitaiti. 9060

ZL4KU Taylor, S. J., 66 Royal Terrace, Alexandra. 9181

ZL4KV Patton, J. A., 15 Kensington Place, Taupo. 2730

ZL4KW Kibblewhite, K. C., P.O. Box 36, Arrowtown. 9196

ZL4KX McCormick, B. P., 39 Moana Crescent, Dunedin. 9001

ZL4KZ Lobb, R. J., 107 Marama Avenue North, Otatara, R.D. 9, Invercargill. 9521

ZL4LD Haines, P. C., 1 Ferntree Drive, Dunedin. 9001

ZL4LE Evans, L. M., Tussock Creek, R.D. 6, Invercargill. 9521

ZL4LH Milson, P. S., 20 Lanark Street, Mosgiel. 9007

ZL4LI Amon, L. E. S., 529 North Road, Dunedin. 9001

ZL4LJ McKenzie, A. I., 24 Scotland Terrace, Green Island, Dunedin. 9006

ZL4LK Whitty, M. J., 29/2 Will Street, Abbotsford, Dunedin. 9006

ZL4LL Benson, J. A., 15 Heath Street, Andersons Bay, Dunedin. 9001

ZL4LN

ZL4LO Tall, E. J., 1 Murray Street, Mosgiel. 9007

ZL4LP Bristow, H. E., 17 Glencarron Street, Alexandra. 9181

ZL4LR Sellar, K. R., 34 City Road, Dunedin. 9001

ZL4LS Hunt, F. G., 30a Dame Street, Waikouaiti. 9063

ZL4LT Howie, G. A., 12 Theyers Street, Alexandra. 9181

ZL4LU Richards, F. B., 84 Onetaunga Road, Birkenhead, Auckland. 1310

ZL4LV Costard, T. J., 17 Stirling Street, Andersons Bay, Dunedin. 9001

ZL4LW Johnson, P. W., Saddle Hill Road, Fairfield, R.D. 1, Dunedin. 9021

ZL4LX Evans, R. W., 558 Tay Street, Invercargill. 9501

ZL4LY Macaskill, D. J., 8 Aldermen Avenue, Papamoa, Tauranga. 3003

ZL4LZ Telford, B., Ruru Avenue, Otatara, R.D. 9, Invercargill. 9521

ZL4MA Ferguson, T. R., 22 Turnbull Street, Invercargill. 9501

ZL4MC McGowan, D. F., 34 Harlech Street, Oamaru. 8901

ZL4MD Hayes, K. J., Ripponvale, R.D. 2, Cromwell. 9191

ZL4ME MacDonald, D. T., 155 Brockville Road, Dunedin. 9001

ZL4MF Bell, J. W., 66 Elizabeth Street, Invercargill. 9501

ZL4MG McKenzie, W. J., 115 Mcquarrie Street, Invercargill. 9501

ZL4MI Tidbury, S. J., P.O. Box 44, Portobello, Dunedin. 9030

ZL4MJ Mitchell, J. S., 109 Layard Street, Invercargill. 9501

ZL4MK Kingston, R. W. G., 12 Kenilworth Street, Waverley, Dunedin. 9001

ZL4ML Lamont, M. S., 3 Garden Place, Glenleith, Dunedin. 9001

ZL4MM Murray, R. W., 101 Inniscort Street, Cromwell. 9191

ZL4MO Askey, A. J., 30 Murano Street, Waverley, Dunedin. 9001

ZL4MP Crichton, J., 17a Edwin Street, Dunedin. 9001

ZL4MS Dalliessi, P. J. C., 217d Ruahine Street, Terrace End, Palmerston North. 5301

ZL4MT Matthews, R. H. (Mrs), Main Road, Mokotua, R.D. 1, Invercargill. 9521

ZL4MU Cook, R. K., 230 Crawford Street, Invercargill. 9501

ZL4MV Dawson, G. L., 32 Vernon Street, Invercargill. 9501

ZL4MW Ward, W. T. R., West Plains Road, R.D. 4, Invercargill. 9521

ZL4MX Govan, W. A., 14b Ravelston Street, Dunedin. 9001

ZL4MY Treweek, M. E., 576 Herbert Street, Invercargill. 9501

ZL4MZ Sherlaw, W. G., 28 Soper Road, Wingatui. 9032

ZL4NA Dinkelaar, F., 48 Cranbrook Avenue, Christchurch. 8005

ZL4NAH Jamieson, A. L. (Miss), 2 Waipuna Street, Blenheim. 7301

ZL4NAJ Johnston, N. A., 33 Matai Crescent, Timaru. 8601

ZL4NAK O'Connor, M. J. F. (Mike), 155 Jacks Pass Road, Hanmer Springs. 8273

ZL4NB Barkman, D. J., 4b Ascot Street, Dunedin. 9001

ZL4NC Patterson, B. R., 66 Koremata Street, Green Island, Dunedin. 9006

ZL4ND Fox, Jack, 17 Inglis Street, Mosgiel. 9007

ZL4NF Fox, R., 26 Sarajewa Place, Massey, Auckland. 1008

ZL4NH McRadden, P., 93 Tomahawk Road, Andersons Bay, Dunedin. 9001

ZL4NI Braddock, Rae, 39 Norton Street, Gore. 9700

ZL4NK Kan, N. C. Y., 90 North Road, North East Valley, Dunedin. 9001

ZL4NL Taylor, A. J., 37 Dipton Street, Invercargill. 9501

ZL4NLRL Reid, L. M., 70 Oxley Crescent, Broad Bay, Dunedin. 9001

ZL4NO Davidson, M., 7 Jack Street, Invercargill. 9501

ZL4NP Goodin, N. H., 325 Tomahawk Road, Dunedin. 9001

ZL4NQ Queenstown Branch 75 NZART, see Branch Directory

ZL4NR McVie, K. R., 18 Grigor Street, Brockville, Dunedin. 9001

ZL4NS Hagen, R. L., 23 Milford Street, Invercargill. 9501

ZL4NU Mackay, A. J., "Glen Dendron", 9 R.D., Oamaru. 8921

ZL4NV Selwyn, T. A., P.O. Box 654, Timaru. 8615

ZL4NW Lee, N. P. C., 51 Dome Street, Invercargill. 9501

ZL4NX Eteveneaux, D. H., 46 Greenock Street, Dunedin. 9001

ZL4NZ Reid, K. W., 6 St Cuthbert Place, Oamaru. 8950

ZL4OB Baird, O. L., 131 Nelson Street, Invercargill. 9501

ZL4OC Smith, R. F., 48 Oates Street, Roslyn, Dunedin. 9001

ZL4OD Parsons, R. D., 69 Oreti Street, Invercargill. 9501

ZL4OE Cumming, C. T., 100 Doon Street, Waverley, Dunedin. 9001

ZL4OF Adams, C. A., 38 Warden Street, Opho, Dunedin. 9001

ZL4OI Sim, R. J., Gordon Road, R.D. 2, North Taieri, Mosgiel. 9032

ZL4OK Kirkwood, B. J., 66 Cory Road, Palm Beach, Waiheke Island. 1240

ZL4OL McAlevy, M. J., P.O. Box 22, Waitaiti. 9060

ZL4OM McIver, P. D., 13 Albert Street, Springfield. 8170

ZL4ON Summerell, B. W., 457 Racecourse Road, Invercargill. 9501

ZL4OR Reeves, W. A., 205 Tomahawk Road, Andersons Bay, Dunedin. 9001

ZL4OT Smith, L. H., 10 Rangiora Terrace, Tahuna, Nelson. 7001

ZL4OU North Otago Branch NZART, see Branch Directory

ZL4OV Major, L. H., 50 Douglas Street, St Kilda, Dunedin. 9001

ZL4OW Vincent, S. V., 30 Charles Street, Weston, Oamaru. 8901

ZL4OX Checketts, R. N., 21 Highfield Terrace, Invercargill. 9501

ZL4OZ Adams, D. A., 47 Wray Street, Dunedin. 9001

ZL4PA Lamb, M. A. (Dr), 26 Edinburgh Crescent, Invercargill. 9501

ZL4PD Neill, K. G., 38 Teignmouth Street, Green Island, Dunedin. 9006

ZL4PE Blyth, B. W., 2 De Courcy Place, Avondale, Christchurch. 8006

ZL4PF Lindsay, M. G., P.O. Box 17-023, Karori, Wellington. 6033

- ZL4PG** Lloyd, D. A., 180 Forbury Road, Dunedin. 9001
ZL4PH Drayton, G. J., Lochiel, R.D. 1, Winton. 9662
ZL4PI Huband, G. J., P.O. Box 1210, Dunedin. 9015
ZL4PK McLean, G. P., 6 Fox Street, Alexandra. 9181
ZL4PM Marsh, P., 33 Falcon Street, Dunedin. 9001
ZL4PN Skeet, B. R., 123 Dunstan Road, R.D. 1, Alexandra. 9181
ZL4PO Price, L. J., 90 Malling Road, Redwood Valley, R.D. 1, Richmond. 7031
ZL4PP Cairns, J. G., 35 Royal Terrace, Alexandra. 9181
ZL4PQ Pryde, G. W., 20b Jellicoe Crescent, Dunedin. 9001
ZL4PR Russell, P. F., 208 Vyner Road, Otatara, R.D. 9, Invercargill. 9521
ZL4PS Stonehouse, P. R., 56 Leith Street, Invercargill. 9501
ZL4PT Thompson, K. P., 180 Mornington Road, Dunedin. 9001
ZL4PV Virtue, A. D. S., Shropshire Street, c/- Post Office, Kingston. 9660
ZL4PW Stevens, C. A. (Mrs), 49 Bringsans Street, Alexandra. 9181
ZL4PX McMillan, A. D. K., 22 Jameson Avenue, St Albans, Christchurch. 8005
ZL4PY Ball, G. L., P.O. Box 171, Dunedin. 9015
ZL4PZ Gilchrist, A. J. H., 37 Roy Crescent, Concord, Dunedin. 9006
ZL4QA Grieve, L. M., Kennington, R.D. 1, Invercargill. 9521
ZL4QB Grocott, R. F., 49 Holyoake Crescent, Lower Hutt. 6009
ZL4QC Walton, A. D., 132 Martin Road, Fairfield, Dunedin. 9006
ZL4QD Hand, K. A., 45 Aotea Street, Dunedin. 9001
ZL4QE Pearce, B. H., c/- Knights Road, R.D. 5, Christchurch. 8021
ZL4QG Nilson, F. E. G., 19 District Road, Roseneath, Sawyers Bay, Dunedin. 9008
ZL4QH Adams, R. J., 4a Wharfe Street, Oamaru. 8901
ZL4QI McDiarmid, K. G., P.O. Box 131, Oamaru. 8915
ZL4QJ Burtenshaw, J. S., 63 Galloway Street, Hamilton. 2001
ZL4QK Cross, A., 5 Driver Street, Long Beach, R.D. 1, Port Chalmers. 9030
ZL4QL Smithies, R. B., 51 Wyn Street, Christchurch. 8002
ZL4QM McLaren, J. B., 8 Marlborough Crescent, Richmond, Nelson. 7002
ZL4QN Bonney, J. E., Hundred Line Road, R.D. 3, Winton. 9662
ZL4QO Lawson, D., 30 McFadden Drive, Mosgiel, Dunedin. 9007
ZL4QP Harwood, P. J., 13 Hanson Street, Portobello, Dunedin. 9004
ZL4QQ Marshall, W. H., 39 Bellona Street, St Kilda, Dunedin. 9001
ZL4QR Dickie, P. J., c/- 3DRV Sofrana Unilines, P.O. Box 3614, Auckland. 1015
ZL4QS Lochhead, J. R., "The Balloon", R.D. 1, Kaitangata. 9200
ZL4QT Donoghue, A. M., P.O. Box 4215, Mid Avenue, Wanganui. 5031
ZL4QU Piper, R. V., Drysdale Road East, R.D. 2, Myross Bush, Invercargill. 9521
ZL4RAE Rae, B. G., 21 Ferntree Drive, Wakari, Dunedin. 9001
ZL4RB Naish, A. W., 45 Argdown Road, Oamaru. 8901
ZL4RC Wekking, J. H. J., 8 St Cuthbert Place, Oamaru. 8950
ZL4RD Perrin, L. D., 69a Otupua Road, Timaru. 8601
ZL4RE Murgatroyd, E. M., 97 Factory Road, Mosgiel. 9007
ZL4RF Osborne, H. F., 8 Conway Crescent, Invercargill. 9501
ZL4RH McIntosh, R. W., 59 Hamilton Street, East Gore, Gore. 9700
ZL4RM Wijkstra, E., 28 White Street, Invercargill. 9501
ZL4RN Donoghue, A. M., 110b Norfolk Street, St Clair, Dunedin. 9001
ZL4RO Graham, J. D., 212 Broughton Street, Gore. 9700
ZL4RP Gillions, R. M., 7 Maryport Street, Lawrence. 9153
ZL4RQ Pyrcott, B. E., 8 Orcaades Street, Shirley, Christchurch. 8006
ZL4RR Moore, J. S. F., 5 Bernard Road, Alberttown, R.D. 2, Wanaka. 9192
ZL4RS Jonker, J. A., 5 Coles Street, Geraldine. 8751
ZL4RT Smith, D. J., 181 Milton Street, Nelson. 7001
ZL4RU Powe, R. L., P.O. Box 26, Palmerston. 9061
ZL4RV Tamplin, A. F. K., 58 Cooper Street, Karori, Wellington. 6005
ZL4RW Bailey, W. D., 35 Tyne Street, Roslyn, Dunedin. 9001
ZL4RY Richardson, Joan, 87 Newcastle Street, Clyde. 9180
ZL4RZ Jardine, M. A., 153 Eden Street, Oamaru. 8901
ZL4SA Helm, P. D., 28 Stafford Street, Ranfurly. 9071
ZL4SB Stevenson, D. J., 369 Highcliff Road, Postal: P.O. Box 9008, Dunedin. 9030
ZL4SC Rait, Marian, 31/7 Signal Hill Road, Opoho, Dunedin. 9001
ZL4SD Excell, R. A., 144 Te Anau Terrace, P.O. Box 7, Te Anau. 9681
ZL4SE Brannigan, A. M., c/- 18 Holyhead Street, Outram. 9055
ZL4SEA Rolton, G. L., 9 Worcester Street, Hampden. 8950
ZL4SF Watt, B. F., 91 Weston Road, Oamaru. 8901
ZL4SJ Bromley, I. J., 87 Manawatu Street, Palmerston North. 5301
ZL4SL Pope, K., 28b Gilbert Street, Blenheim. 7301
ZL4SM Finer, W. R., 7 Swanson Road, Henderson, Auckland. 1008
ZL4SN McLeod, N. C., 65 Stuart Street, Oamaru. 8901
ZL4SO Ellis, Kathy, 3 Hawera Road, Kohimarama, Auckland. 1005
ZL4SQ Leadley, A. M., Mangaotaki Road, Piopio. 2555
ZL4SR Fletcher, R. E., 19 Riverside Drive South, Lower Hutt. 6009
ZL4SS Jury, L. S., 8 Beach Road, R.D. 1, Te Horo. 6470
ZL4ST Beveridge, G. W., 83 Russell Street, Alexandra. 9181
ZL4SU Murrell, I. G., 65 King Street, Te Kuiti. 2500
ZL4SV Hayter, J. W., 22 Omapere Road, Kaikohe. 0400
ZL4SX Lovatt, D. J., 23a Janet Place, Rotorua. 3201
ZL4TA Millar, G. E., 18a Arun Street, Oamaru. 8901
ZL4TAB Olsen, W. J., P.O. Box 29, Mosgiel, Dunedin. 9032
ZL4TAC Parish, D. A., 25 Truscot Avenue, Johnsonville, Wellington. 6004
ZL4TAE Thomas, T. M., 105 Larnach Road, Dunedin. 9001
ZL4TAF Bayliss, A., 13 Rata Drive, Otematata. 8950
ZL4TAH Checketts, G. N., 21 Highfield Terrace, Invercargill. 9501
ZL4TAI Calder, A. D., Fernhill, Argdown, R.D. 1D, Oamaru. 8921
ZL4TAJ Paterson, E. G., Waianiwa, R.D. 4, Invercargill. 9521
ZL4TAK Bowen, D. J., Aspiring Lodge, Corner Dunmore & Dunvegan Streets, Wanaka. 9192
ZL4TAL Russell, N., 3/156 Salford Street, Invercargill. 9501
ZL4TAM Mamadianian, A. P., 413 Centre Street, Invercargill. 9501
ZL4TAP Johnston, G. H. L., 230 Talbot Street, Invercargill. 9501
ZL4TAQ Howell, A. D., 18 Beverley Street, Merivale, Christchurch. 8001
ZL4TAR Kirkby, K. J., 5 Lesney Street, Maryhill, Dunedin. 9001
ZL4TAS Doak, D. E. (Mrs), 116 Severn Street, Clifton, Invercargill. 9501
ZL4TAV Gordon, G. P. C., 23 Bedford Parade, Brighton. 9051
ZL4TAY Field, E. T., 192 Lagan Street, Bluff. 9503
ZL4TAZ Wade, R. B., 8 Harbour Heights, Waverley, Dunedin. 9001
ZL4TB Campbell, A. J. N., Myross Road, R.D. 6, Invercargill. 9521
ZL4TBA Croy, P. R., 65 Shaw Street, Mosgiel, Dunedin. 9007
ZL4TBB Sapwell, H. W. D., 17 Andrew Street, Timaru. 8601
ZL4TBD Puklowski, N. A., 127 North Street, Ashhurst. 5451
ZL4TBF McNamara, B. R., Lauder, R.D. 2, Oamaru. 8921
ZL4TBI Thompson, E. R., 20 Taupiko Place, Green Bay, Auckland. 1007
ZL4TBL MacDonald, C. S., Drummond, R.D. 3, Otautau. 9653
ZL4TBN Nelson, D. A., 24 Jensen Street, Green Island, Dunedin. 9006
ZL4TBO Stewart, E. A., Main Road, Kuri Bush, Brighton. 9051
ZL4TBR Cleaver, R. A. J., 97 Robertson Street, Gore. 9700
ZL4TBS Anderson, M. H., P.O. Box 6273, Dunedin North. 9030
ZL4TCA Griffith, I. W., 17 Gilmore Street, Dunedin. 9001
ZL4TCB Walker, B. A., Goodwood Road, R.D. 1, Palmerston. 9061
ZL4TCC Le Quesne, P. W. H., 23 Oriol Place, Pirimai, Napier. 4001
ZL4TCD Todd, R. J., 30 Naumai Street, Gore. 9700
ZL4TCF Norgrove, T. J., 9 Dakota Place, Waldronville, Dunedin. 9006
ZL4TCI Barker, B. B., 53 Tahiti Street, Mapua. 7155
ZL4TCJ Wagener, A. R., c/- R. D. Wagener, Main Road, R.D. 4, Kaitaia. 0500
ZL4TCM Manning, C. S., Jolendale, Petersen Place, Alexandra. 9181
ZL4TCN Holley, J. A. C., 44 Scotland Street, Roxburgh. 9156
ZL4TCO Mooney, W. J., 21 Greenhill Avenue, Dunedin. 9001
ZL4TCP Bacica, A. I. G., Awanui Straight, Kaitaia. 0500
ZL4TCS Falconer, E. F., P.O. Box 214, Gore. 9700
ZL4TCT Sinclair, R. W., 70 Lorn Street, Invercargill. 9501
ZL4TCV Nixon, D. B., 89 Quebec Street, Mornington, Wellington. 6002
ZL4TCW Smith, A., 64 Dome Street, Invercargill. 9501
ZL4TCY Childs, P. B., 5 Cromwell Street, Dunedin. 9001
ZL4TCZ Gollop, P. J., 2/71 Melbourne Street, Invercargill. 9501
ZL4TDB Wilden, J. H., 46 Hocken Street, Dunedin. 9001
ZL4TDE Gallagher, P. R., 112 John Sims Drive, Johnsonville, Wellington. 6004
ZL4TDF Walker, J. D., 7 Meon Street, Oamaru. 8901
ZL4TDI Bowen, P. D. O., 207 Taiari Road, Dunedin. 9001
ZL4TDJ Dingwall, A. B., 47 Gilkison Street, Dunedin. 9001
ZL4TDK Dwyer, W. A., 21 Summertime Avenue, Dunedin. 9001
ZL4TDL Jones, I. E., Ramsay Street, Allanton, R.D. 2, Mosgiel. 9032
ZL4TDM McKeown, D. W., 61 Eden Street, Oamaru. 8901
ZL4TDN Garry, N. A., 86 Passmore Crescent, Maori Hill, Dunedin. 9001
ZL4TDP Aronsen, P. G., 10 Girvan Street, Wallacetown, Invercargill. 9502
ZL4TDQ Davidson, R. W., 48 Montrose Street, Invercargill. 9501
ZL4TDR Zoest, A. R., 25 Jaunpur Crescent, Broadmeadows, Wellington. 6004
ZL4TDS King, W. A., P.O. Box 30, Roxburgh. 9156
ZL4TDT Johnson, W. A., 10/254 Main Street, Gore. 9700
ZL4TDU Lynn, I. G., 26 Larkin Street, Dunedin. 9001
ZL4TDX McAllum, H. J. F., 32a Wroxton Terrace, Fendalton, Christchurch. 8001
ZL4TDZ Duffy, K. J., P.O. Box 6025, Invercargill North. 9530
ZL4TF Wallace, J. M., 95 Chelmsford Street, Invercargill. 9501
ZL4TFD Ball, D. R., 2c Towey Street, Oamaru. 8901
ZL4TFE Bokser, D. L., 3 Earn Street, Oamaru. 8901
ZL4TFG Neill, P. G., 38 Teignmouth Street, Green Island, Dunedin. 9006
ZL4TFH Allen, M. F., 6 Croydon Street, Dunedin. 9001
ZL4TFI Brodie, J. T., P.O. Box 6062, Awapuni, Palmerston North. 5331
ZL4TFJ Shirreffs, C. S., 145 Scandrett Street, Invercargill. 9501
ZL4TFK Fletcher, R. F., 5 Wells Street, Brighton, Dunedin. 9051
ZL4TFL Collier, J. B., 86 Main Street, Mornington, Dunedin. 9001
ZL4TFP Bedford, W. M., c/- Milburn Gardens, R.D. 2, Milton. 9250
ZL4TFR Waters, J. L., P.O. Box 11, Kingston, Southland. 9660

ZL4TFV

ZL4TFV Calder, D. G., 13 Elgin Rise, P.O. Box 113, Winton. 9662
ZL4TFW Gamble, A. A., 13c Seaview Road, Cable Bay, R.D. 1, Kaiaia. 0500
ZL4TFY Craighead, G., 162 Balmacewen Road, Dunedin. 9001
ZL4TGA Scott, P. R., 99 Gilkinson Street, Dunedin. 9001
ZL4TGB Grant, W. A., P.O. Box 375, Dunedin. 9015
ZL4TGD Darragh, G., 45 Craig Street, Invercargill. 9501
ZL4TGF Williams, G. B., 64 Forfar Crescent, Invercargill. 9501
ZL4TGG Keen, R. G., 274 Highcliff Road, Andersons Bay, Dunedin. 9001
ZL4TGH Connolly, R. C., P.O. Box 1229, Dunedin. 9015
ZL4TGI Pettigrew, A. D., 384 McQuarrie Street, Invercargill. 9501
ZL4TGL Smith, R. A. J., 50 Dryden Street, Milton, South Otago. 9250
ZL4TGM Black, W. A., 149 Cargill Street, Dunedin. 9001
ZL4TGN Nisbet, R. A., 3/360 Madras Street, Christchurch. 8001
ZL4TGO McAlevy, K. T., 78 Brockville Road, Glenross, Dunedin. 9001
ZL4TGP Watson, R. M., 21 Arcus Street, Whangarei. 0101
ZL4TQG Andrews, B. D., 14 Como Street, Dunedin. 9001
ZL4TGR Watson, D. K., 114 Cannington Road, Maori Hill, Dunedin. 9001
ZL4TGS Faulkner, D. L., 8 Grove Burn Road, Tuatapere. 9655
ZL4TGT Gerrie, A. L., 56 Oakwood Avenue, Dunedin. 9001
ZL4TGU Beeby, P. J., 261 Clyde Street, P.O. Box 192, Balclutha. 9200
ZL4TGV Allan, R. P., 29 Venus Street, Invercargill. 9501
ZL4TGX Cross, G. J., 153 McMaster Street, Invercargill. 9501
ZL4TGY Parris, R. C., 57 Rata Drive, Otematata. 8950
ZL4TGZ Gollop, P. J., 6/202 Crinan Street, Invercargill. 9501
ZL4TH Larsen, S. N., 26 Columbia Avenue, Dunedin. 9001
ZL4THC Andrews, J. W. A., 94 Camarvon Court, Invercargill. 9501
ZL4THE Booth, A. W., 24 Arawa Street, Gore. 9700
ZL4THF Burge, G. G., 34 Colmar Road, Howick, Auckland. 1705
ZL4THG McAuliffe, K. J., 118 Morton Street, Invercargill. 9501
ZL4THH Searle, J. J., 22 Chisholm Place, Andersons Bay, Dunedin. 9001
ZL4THJ Rabbidge, M. J., "Crayburn Farm", Graham Road, R.D. 1, Tokanui. 9671
ZL4THK Sinclair, D. H., 8 Argyle Street, Weston, Oamaru. 8901
ZL4THL Davidson, R. J., Earnsclough Road, P.O. Box 6, Clyde. 9180
ZL4THP Da-Rin, K. J., 11 Ronay Street, Bradford, Dunedin. 9001
ZL4THQ Crimp, G. R., 31 Davies Road, New Plymouth. 4601
ZL4THR Spence-Ord, K. D., 37 Lune Street, Oamaru. 8901
ZL4THT Blee, A. R., 7 Campbell Street, Alexandra. 9181
ZL4THV Bennett, B. D., 99 Oreti Street, Invercargill. 9501
ZL4THZ McLean, C. J., Longbush, R.D. 1, Invercargill. 9521
ZL4TIA Larsen, C. M. (Ms), 26 Columbia Avenue, Dunedin. 9001
ZL4TIB Wallace, W. D., 17 Delphic Street, Sawyers Bay, Dunedin. 9008
ZL4TIC Stewart, C. H., 29 Paisley Place, Invercargill. 9501
ZL4TID McRae, G. I., 1 Hillcrest Avenue, Mataura, Invercargill. 9753
ZL4TIE Barber, B. J., "Glencoe", R.D. 2, Invercargill. 9521
ZL4TIG Hill, A. R. M., 16 Wyre Street, Kaitangata. 9200
ZL4TIJ Peirson, W. E., 16 Orbell Street, Timaru. 8601
ZL4TIK Curline, A. J., 16 Derby Street, Green Island, Dunedin. 9006
ZL4TIL Drage, I. J., 695 North Road, Invercargill. 9501
ZL4TIM Watson, N. R., 59 Rountree Street, Christchurch. 8004
ZL4TIN Murdoch, G. N., 7 Kelso Place, Invercargill. 9501
ZL4TIO Moore, J. S., 10 Dalrymple Street, Dunedin. 9001
ZL4TIQ Dupont, C. C., 6 Lothian Crescent, Invercargill. 9501
ZL4TIQ McLaren, G. D., 39 Robertson Street, Frankton, Queenstown. 9197
ZL4TIR Woodrow, P. J., P.O. Box 75, Stirling, Balclutha. 9200
ZL4TIS Williams, A. R., 26 Centre Street, Invercargill. 9501
ZL4TIW King, D. J., 14 Inglis Street, Mosgiel. 9007
ZL4TIY Laroooy, G. M., 617 York Street, Hastings. 4201
ZL4TIZ Thomson, A. A., 29 Warden Street, Dunedin. 9001
ZL4TJB McCall, D. A., c/- A.G. McCall, 42 Filleul Street, Invercargill. 9501
ZL4TJC Cavanagh, D. B., 74 Koa Street, Gore. 9700
ZL4TJE Townsend, A. A., 18 Kingsbridge Place, Newlands, Wellington. 6004
ZL4TJF Matthews, C. M., 62 Mechanic Street, North East Valley, Dunedin. 9001
ZL4TJH Balch, R. M., 23 Connell Street, Dunedin. 9001
ZL4TJK King, A. E. J., Kaka Point, R.D. 1, Balclutha. 9200
ZL4TJM Fleury, B. R., 32a Havelock Street, Dunedin. 9001
ZL4TJN Peirson, J. R. W., 63 Signal Hill Road, Dunedin. 9001
ZL4TJP Askin, Fay, Moeraki, R.D. 2, Palmerston. 9061
ZL4TJS Holland, B. J., c/- Police Station, 32 Princes Street, Waikari. 8276
ZL4TJT Holland, J. P., c/- T.P. Holland, P.O. Box 395, Alexandra. 9181
ZL4TJX Nicholls, M. A., 9 Werneth Street, Atawhai, Nelson. 7001
ZL4TKD Anderson, M. L., 141 Catherine Street, Invercargill. 9501
ZL4TKJ Melgren, A. J., Oki Street, R.D. 9, Currentown, Invercargill. 9521

ZL4TKK Spence, R. W., 34 Watt Road, Otatara, R.D. 9, Invercargill. 9521
ZL4TKM Mitchell, G. D., 17 Kaka Road, St Leonards, Dunedin. 9001
ZL4TKP Hogg, G. M., 6 Michie Street, Bellknoves, Dunedin. 9001
ZL4TKQ Tamplin, N. L. A., 58 Cooper Street, Karori, Wellington. 6005
ZL4TKS Mason, E. C., 49 John Street, Ranfurly. 9071
ZL4TKT Doak, N. L., 116 Severn Street, Clifton, Invercargill. 9501
ZL4TKU McLean, G. W., 102 Ravelston Street, Dunedin. 9001
ZL4TKW Morgan, J. R., P.O. Box 5429, Moray Place, Dunedin. 9031
ZL4TKZ Austin, T. D., 19 Flagstaff Road, Bluff. 9503
ZL4TLA MacArthur, P. J., 52 Salmond Street, Halfway Bush, Dunedin. 9001
ZL4TLD Dunn, G. G., 27 Northfield Avenue, Dunedin. 9001
ZL4TLE Elliott, L. G., 36a Murano Street, Dunedin. 9001
ZL4TLF Osborne, K. F., Milburne Road, Milton. 9250
ZL4TLG McConechy, G. S., 71 Heywood Street, Invercargill. 9501
ZL4TLH McDonald, A. H., 190 Morton Street, Invercargill. 9501
ZL4TLI Wright, D. W., 309 Talbot Street, Invercargill. 9501
ZL4TLL Blair, R. C. W., Taumata, R.D., Clinton. 9252
ZL4TLM Matthews, L. J. (Miss), Main Road, Mokotua, R.D. 1, Invercargill. 9521
ZL4TLR Ross, L. A., 10 Roy Crescent, Concord, Dunedin. 9006
ZL4TLS Smith, Liz, 50 Dryden Street, Milton. 9250
ZL4TLX Wark, W. J., 3 Dunrobin Street, Dunedin. 9001
ZL4TMT Duffy, W. J., P.O. Box 6025, Invercargill. 9530
ZL4TMC Cleland, M. J., 9 Taward Street, Oamaru. 8901
ZL4TMS Sinclair, M. P., 22 Mills Street, St Kilda, Dunedin. 9001
ZL4TNP Partridge, N. P., 46 Waiuu Crescent, Invercargill. 9501
ZL4TO Mann, I. A., 72 Greig Street, Broad Bay, Dunedin. 9004
ZL4TIP Garry, A. M., 4 Tilburn Street, Halfway Bush, Dunedin. 9001
ZL4TPD Dennison, W. P., 301 Ythan Street, Invercargill. 9501
ZL4TQ Sum, D. A. (Dr), c/- 44 Adelaide Street, Petone. 6008
ZL4TR Armstrong, E. W., 15 London Street, Weston, Oamaru. 8901
ZL4TRH Hardwick, T. R., 126 Barrow Street, Bluff. 9503
ZL4TRM McLennan, R. N., P.O. Box 6394, Dunedin North. 9030
ZL4TS Smith, J. W., 9655 465 W., Seattle, WA 98-136, USA
ZL4TSA Aronsen, S. A., 10 Girvin Street, Wallacetown, Invercargill. 9502
ZL4TSE Tse, D. S., c/- TT Vegetable Garden, Buller Road, Levin. 5500
ZL4TSH McDermott, S. G., 6 Royal Terrace, Oamaru. 8901
ZL4TSK Kerr, D. S., 3 Rainton Road, Kew, Dunedin. 9001
ZL4TT Carter, F. L., 34 Higgs Road, Mapua, Nelson. 7155
ZL4TUD McConnachie, N. E., Joseph Street, R.D. 1, Taiieri Mouth, Brighton, Otago. 9051
ZL4TV Adamson, A. T., 311 Pine Hill Road, Liberton, Dunedin. 9001
ZL4TX Stuart, B. E., 23 Walter Street, Dunedin. 9001
ZL4UAB Barber, A., 16 Spiers Road, Halfway Bush, Dunedin. 9001
ZL4UAC Middlemiss, B. W., 112 Margaret Street, Invercargill. 9501
ZL4UHF Aldridge, S. J., 201 Dalziel Road, Dunedin. 9001
ZL4UJB Wikstra, D. D., 28 White Street, Invercargill. 9501
ZL4UJC Cunningham, J. C., 13 Paisley Court, Invercargill. 9501
ZL4UJO Watt, J., 91 Weston Road, Oamaru. 8901
ZL4UJR Richards, J. T., 4b Limburg Lane, Spreydon, Christchurch. 8002
ZL4UMS Sheat, M. D., House 5, Weston Sub Station, Airedale Road, Weston, Oamaru. 8901
ZL4UPP Cox, M. D., 215 Highgate, Roslyn, Dunedin. 9001
ZL4US Lambert, M. G., Bremner Road, R.D. 1, Outram. 9055
ZL4USB Blair, P. J., 5 Merrie Creek Road, Clinton. 9252
ZL4VAB Wilden, R. M. (Mrs), 46 Hocken Street, Kenmure, Dunedin. 9001
ZL4VAC Bootsma, D., 17 Chelmer Street, Oamaru. 8901
ZL4VAD Meikle, J. W., 15 Girvan Street, Oamaru. 8901
ZL4VAE Lambeth, F. R., 24 Marslin Street, Alexandra. 9181
ZL4VAG Brown, P. N., 25 Baxter Street, Balclutha. 9200
ZL4VAJ Joe, G. D., R.D. 18C, Oamaru. 8921
ZL4VAP Popham, A. D., 47 Kelso Crescent, Invercargill. 9501
ZL4VAQ Needham, J. W., 232 Spey Street, Invercargill. 9501
ZL4VBA Partridge, A. B., 13a Beach Street, Dunedin. 9001
ZL4VBA Solin, B. S., 315 Ravensbourne Road, Ravensbourne, Dunedin. 9002
ZL4VBB Robinson, J. P., P.O. Box 127, Alexandra. 9181
ZL4VBC Pearce, S. L. (Mrs), c/- Knights Road, R.D. 5, Christchurch. 8021
ZL4VBE Still, E. D., 439 South Road, Dunedin. 9001
ZL4VBI Phillips, A. D., 95 Manapouri Street, Ravensbourne, Dunedin. 9002
ZL4VBJ Mair, B. J., 41 Hope Street, Dunedin. 9001
ZL4VBM McMillan, B. A., 230 Kenmure Road, Dunedin. 9001
ZL4VBP Hallett, B. P., 57 Stephen Street, Dunedin. 9001
ZL4VCH Chivers, R. M., 5a Kowhai Street, Naenae, Lower Hutt. 6009
ZL4VCR Simpson, R. K., 1018 Brighton Road, Brighton. 9051
ZL4VCS Stephen, C. D., c/- 45 Ventry Street, Alexandra. 9181
ZL4VDF Findlater, D. N., 41 Montague Street, Dunedin. 9001
ZL4VDM Miller, D. R., 34 Herron Street, Brockville, Dunedin. 9001
ZL4VEH Hunt, E. J., 691 Portobello Road, Broad Bay, Dunedin. 9003

ZL4VGA Anderson, R. G., 121 Elgin Road, Mornington, Dunedin. 9001
ZL4VGB Broad, G. M., 64 English Avenue, Dunedin. 9001
ZL4VGP Perham, G. W., 21 Trent Street, Oamaru. 8901
ZL4VGV Seidelin, G. R., 22 Maryhill Terrace, Mornington, Dunedin. 9001
ZL4VGW Bain, D. F., 62 Cockerell Street, Dunedin. 9001
ZL4VIG Gilchrist, I. C. (Mrs), 8 London Street, Weston. 8901
ZL4VJL Lawton, J. E., 88 Grant Road, Otatara, R.D. 9, Invercargill. 9521
ZL4VJS Shand, J. C., 344 Rockdale Road, Invercargill. 9501
ZL4VK Rushby, C. H., 55 Spencer Street, Andersons Bay, Dunedin. 9001
ZL4VKM McCullough, K. J., Papatowai, R.D. 2, Owaka. 9251
ZL4VM Marris, V. T., 7 Meridian Street, Port Chalmers, Dunedin. 9005
ZL4VOW Watson, Owen, 103 Braeview Crescent, Maori Hill, Dunedin. 9001

ZL4VPG Gilchrist, P. J., 4 Stuart Street, Oamaru. 8901
ZL4VPM Mortimer, V. P., 31b Weaver Street, Oamaru. 8901
ZL4VRF France, R. E., 3 Muir Street, Green Island, Dunedin. 9006
ZL4VT Eigensperger, E., c/- P.O. Box 1231, Rotorua. 3215
ZL4VV Kempson, C. H., Larcombs Road, Broadfield, R D 5, Christchurch. 8021
ZL4VWB Beyer, W. F. T., 132 Eden Street, Oamaru. 8901
ZL4VWG Gilchrist, W. J., 8 London Street, Weston. 8901
ZL4WA Scott, J. R., Cochranes Road, R.D. 7, Ashburton. 8300
ZL4WAH Watson, Anne, 114 Cannington Road, Dunedin. 9001
ZL4WAQ Jaquiere, S. G., 56 Royal Terrace, Dunedin. 9001
ZL4WCP Wishart, I. D., 32 Hamilton Road, Queenstown. 9197
ZL4WEK Krol, E., 23 Franklin Street, Dunedin. 9001
ZL4WJ Busby, Wendy, 21 Ferntree Drive, Wakari, Dunedin. 9001
ZL4WLS Strong, L. D., 29 Church Street, Mosgiel, Dunedin. 9007
ZL4WRC Clark, R. W., 5 Leathaby Street, Abbotsford, Dunedin. 9006

NEW ZEALAND DEPENDENCIES—ZL5, 6, 7, 8, 9, 0

ZL5 Antarctica

ZL6 NZART

- ZL6A** New Zealand Association of Radio Transmitters (Inc.), P.O. Box 40-525, Upper Hutt. 6415
ZL6E AREC Master Station.
ZL6IW NZART Monitoring Service.
ZL6KCM Kapiti Coast Museum, 9 Elizabeth Street, Waikanae. 6454
ZL6OTC New Zealand Old Timers Club (ZL), c/- P.C. Anderson, 32 Gilmour Street, Waihi. 3061
ZL6RFA New Plymouth Amateur Radio Club, 45 Robe Street, New Plymouth. 4601
ZL6YL NZ Women Amateur Radio Operators, Trustee: Jill O'Donnell (ZL2DBO), 39 Lismore Street, New Plymouth. 4601

ZL7 Chatham Islands

- ZL7BJE** Day, S. M. (Mrs), P.O. Box 175, Waitangi. 8030
ZL7NAA Tuanui, J. (Mrs), P.O. Box 154, Waitangi. 8030
ZL7TKI Sanson, I. M., P.O. Box 65, Waitangi. 8030
ZL7TTP Locke, S. D., Telecom South Ltd., Tuku Road, Waitangi. 8030

ZL8 Kermadec Islands

ZL9 Auckland and Campbell Islands

ZL0 Overseas Visitors

SOUTH PACIFIC AMATEUR RADIO LISTINGS

Tonga

- A35AJ** Peterson, Andrew P., Yacht *Jakaranda*.
A35CE Schmidt, Ulmar, Beach House.
A35CT Thompson, Craig S., Haveluloto Village.
A35DD Dankert, Daniel M., Nuku'alofa.
A35DM Dehonin, Marcel, Beach House.
A35EH Ranzo, Mocchetto M., Nuku'alofa.
A35EJ Haade, Edward J., Yacht *Seatub*.
A35GS Stumpe, Elke G., Yacht *Antaia*.
A35HB Borgnas, Hans J. O., Neiafu, Vava'u.
A35HC Conant, Howard R., Yacht *Graill*.
A35HF Farley Jr, Harold C., Yacht *Airborne*.
A35HN Na'ati, Hama, Malapo, Tongatapu.
A35HS Matsuo, Kenichi, Neiafu, Vava'u.
A35HY Yamaguchi, Hiroji, J.O.C.V. Office, Nuku'alofa.
A35JD Harrison, Donald J., Yacht *Cat's Paw IV*.
A35JM Shimizu, Akio, Nuku'alofa.
A35JT Ballaine, Heather S., Yacht *42'*.
A35KB Burke, Fr. K., Nuku'alofa.
A35KG Gerhard, K., Yacht *UBI Bene*.
A35KO Warner, Kenneth J., Yacht *Iron Butterfly*.
A35KX Grantt, Richard G., Yacht *Celerity*.
A35LF Malu, Lemeki, Tofoa, Tongatapu.
A35LG McCarthy, Linda G., Yacht *Southern Cross*.
A35LM MacMillan, L. A., Nuku'alofa.
A35MJ Downs, M. J., Kolofo'ou, Nuku'alofa.
A35MS Schuster, Manfred, Vaini Village.
A35MW Wada, Morihiro, Nuku'alofa.
A35MZ Mitchell, Harry R., Yacht *Whalesong*.
A35NZ Mizuno, Keiko, Ma'ufanga.
A35RK Kidd, Paul R., Haveluloto.
A35RQ Dending, Robert E., Yacht *Rejoice*.
A35RV Munt, Robert B., Nuku'alofa.
A35SB Beck, Stephen C., Pacific Royal Hotel.
A35SG Nagai, Shinji, J. O. C. V., Nuku'alofa.
A35SK Thustroem, Alf R., Nuku'alofa.
A35SL Lockwood, Stephen M., Yacht *Halo*.
A35SM Mizuno, Shigehiro, Ma'ufanga.
A35SQ Preston, Robert C., Dateline Hotel, Nuku'alofa.
A35SR Ragle, Sharon C., Yacht *Zigger*.
A35TD Carpenter, Robert W., Yacht *Nvara*.
A35TT Andrew, Sally E., Yacht *Fellowship*.
A35UF Mogringer, Hilde, Beach House.
A35VI Hartz, Edwin H., Pacific Royal Hotel, Nuku'alofa.
A35VW Klassen, Victor W., Yacht *Maggie Drum*.
A35WA Beathold, Faibt, Heilaia Guest House.
A35YY Yasaka, Yumi, J. O. C. V., Nuku'alofa.
A35ZG Salvaneschi, Michael, Yacht *Mika*.

Fiji

- 3D2AA** Aisake, A., P.O. Box 4969, Lautoka, Fiji.
3D2AG de Ramon, A., P.O. Box 14-633, Suva.
3D2CC Carter, T. F., Muscat Cove Resort.
3D2CM Northcott, R. L., P.O. Box 1168, Suva.
3D2CS Broadbridge, E. K., P.O. Box 1046, Suva.
3D2DM Meyers, D. D., P.O. Box 184, Suva.
3D2ER Singh, Raji, P.O. Box 184, Suva.
3D2ES Saphore, E., UN Mineral Res. Dept., Suva.

- 3D2JO** Turaganivalu, J., 14 Alexander Street, Suva.
3D2KM MacKinnon, K., c/- F.S.C., P.O. Box 63, Lautoka.
3D2MP Prakash, M., P.O. Box 5324, Raiwaqa.
3D2PO Doncaster, N. I. C., c/- Air Pacific Nadi Airport, Nadi Airport, Nadi.
3D2PS Schulz, A. F. P., P.O. Box 5372, Raiwaqa.
3D2RP Prasad, R., P.O. Box 1267, Labasa, Fiji Islands.
3D2SS First Suva Scout Group, P.O. Box 2344, Government Buildings, Suva.
3D2UR USP Amateur Radio Club, P.O. Box 1168, Suva.

Solomon Islands

- H44DG** Gentry, D., P.O. Box 986, Honiara.
H44DM Mills, D., P.O. Box 568, Honiara.
H44FB Boswell, F., P.O. Box 986, Honiara.
H44GP Pearson, G., P.O. Box 292, Honiara.
H44GR Richardson, G., P.O. Box 127, Honiara.
H44KK Takehiko, I., P.O. Box 164, Honiara.
H44MS Steffen, B., see DL2GAC.
H44SI Solomon Island Radio Society, P.O. Box 418, Honiara.
H44XJA Ashley, J., P.O. Box 986, Honiara.
H44XJR Rence, J., P.O. Box 986, Honiara.

New Caledonia

- FK/F5LSP** Hertzog, Pascal, Box 60, 98880, La Foa.
FK0BS Goujon, Jean, 36 rue Mariotti, 98800, Noumea.
FK1RF Chardola, Jean-Claude, Box 3111, 98846, Noumea.
FK1RO Szymanski, Pascal, Box 11-451, 98802, Noumea.
FK1RP Roussel, Jean-Yves, Box 8585, 98807, Noumea.
FK1RR Miossec, Gil, 34 rue P. Cane, 98800, Noumea.
FK1RS Gallois, Jean-Pierre, 7 rue Calimbre, 98800, Noumea.
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FK1SO Lehoux, Gerard, 22 Lot Leroux, 98810, Mont Dore.
FK1TK Rainer, Henri, 190 rue Boutmy, Box 4608, 98847, Noumea.
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FK1UC Cherrier, Yves, 86 Rue Durmont-Durville, 98830, Auteuil.
FK1UL Jauneau, Jean-Claude, Box 2100, Pont des Français, 98810, Mont Dore.
FK1UM Janisel, Robert, Box 917, 98830, Koutio.
FK8AH Garbe, Robert, Box 4490, 98847, Noumea.
FK8AL Garbe, Jean, Box 3994, 98846, Noumea.
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FK8BR Ynet-Mine, Maurice, 98825, Pouembout.
FK8CA Gouillard, Alain, Box 131, 98830, Koutio.
FK8CC Deramane, Simon, Box 7514, 98801, Noumea.
FK8CE Hoarau, Dominique, Box 138, 98870, Bourail.
FK8CP Touzard, Remi, Box 945, 98845, Noumea.
FK8CR Szymanski, Eddy, QSL to F6EWK.
FK8CW Pihahuna, William, Box 3286, 98846, Noumea.
FK8DD Torope, Samuel, Box 3040, 98846, Noumea.
FK8DI Rabu, Dominique, 5 rue C. Savoie, 98800, Noumea.

FK8DJ Kryger, Jean-Claude, 21 rue Charbonneau, 98800, Noumea.
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FK8EM Wagner, Pierre, 68 rue de 24 Septembre, 98800, Noumea.
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FK8EV Juncas, Jacques, Internat, 98860, Kone.
FK8EW Leperlier, Karl, 6 rue du Collier Blanc, 98800, Noumea.
FK8EX Lesaulnier, Rene, 131 route de l'Anse Vata, 98800, Noumea.
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FK8FB Debien, Lionel, Box 428, 98845, Noumea.
FK8FC Tourette, Michel, Box 2309, 98846, Noumea.
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FK8GX Mahault, Michel, 61 Route des Forets, 98830, Mont Koghi.
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FK8GZ Gaveau, Emile, Box 2005, 98846, Noumea.
FK8HA Lefebvre, Patrice, Box 74, 98830, Dumbea.
FK8HC Petitjean, Franck, Box 7636, 98801, Noumea.
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Established in 1953. Ever since their famous FT-200, FT-101 transceivers and FRG-7 receiver, Yaesu has gained and secured international recognition as a dedicated manufacturer of the Ultimate in Amateur Radio equipment.

Being a very specialised manufacturer, Yaesu caters primarily for the upper echelon market. Yaesu's amateur equipment stands alone in meeting MIL-STD 810 for shock and vibration. Rarely are their products the cheapest but the engineering excellence, high quality, reliability and standards of presentation offer an assurance of confidence for those wanting to acquire and operate the ultimate equipment for their hobby.

Current models available epitomizing Yaesu's unchallenged standards of excellence include FT-1000D; FT-1000MP; FT-990 and FT-840 general coverage transceivers; FT-8500; FT-8000 and FT-3000 VHF Base/Mobiles; FT-736 Satellite Station and the FT-2/6 and 790 series of multi-modes. The recently released FT-50 and VS10 Dualband handhelds join the famous FT-23, FT411 and FT-530 handheld transceivers. The FT-2010 Commercial type-approved is proving itself to be in a class of its own for AREC/CD applications.



FT-50

KENWOOD

A division of this large Japanese Corporation dedicated to the manufacture of a wide range of Amateur Radio Communication products. Originally TRIQ, Kenwood's early TS-120, TS-520, TS-820 through to their latest TS-570/870 series are commonly heard on any HF band.

Current models for HF DX are TS-60; TS-450; TS-570; TS-870. Handhelds include TH-22; TH-42 and TH-79 Dualbanders. VHF/UHF Mobiles are TM-261; TM-461 and TM-733 Dualbanders; TM-742 Tri-band and TM-255 Multimode.



DAIWA

A large number of ham shacks in ZL are now powered with Daiwa's incredible power supplies. The latest PS400-X 40Amp Variable Voltage fully metered and protected unit represents outstanding reliability and dependability for only \$495!

In addition to these power supplies, Daiwa is a highly reputed manufacturer of other essential accessories: Cross-needle SWR Bridges CN101 and CN103; DP800 series digital SWR/PWR Meters; Antenna Tuning Units CNW 420 and CNW520; an extensive range of VHF and UHF Linear Amplifiers and other accessories such as Duplexers, Coaxial Switches and Antennas.



CNW-420



A name synonymous in ZL with Top Performing VHF/UHF Vertical, Collinear and Mobile antennas. The gain available from these durable, easily erected and maintained X-50, X-300 and X-500 collinear makes rotatable Yagi arrays almost unnecessary. Diamond produce

an extensive range of mobile VHF/UHF antennas to suit all requirements and in keeping with today's modern vehicle design.

NR Series (no radials): NR-2L; NR-2C; NR-790. **SG Series (super gainers):** SG-7900; SG-7700. **AZ Series (new, slimline):** AZ-511.

Also a range of specialized antennas: D130 — the well known wide-band Discone; D505 and D707 High Gain Active antenna for scanners; DP-CP5 5-band HF Vertical with space saving trapped radials; W735 and W80-10 trapped dipole arrays for the HF bands.

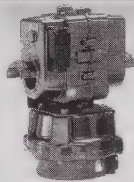
hy-gain[®] by Telex

from every DX corner of the world.

For nearly 40 years Hy-Gain in the USA has been the leading manufacturer of antenna arrays for the world's most discerning and demanding market — Amateur Radio Operators.

With a 32-acre antenna test range on the factory site 40 years of experience in Amateur, Military and Commercial markets, Hy-Gain antennas are without compromise and beyond compare.

We have available the Thunderbird tri-band series from TH-11DX to TH-2M3K including the most popular TH-3MK4 and TH-3JR. We have the latest TH-14 with Para Sleeve for optimum bandwidth. Long John Monobanders for maximum performance on 20, 15 or 10m. When a tower with Yagis is not practicable we have DX Verticals 12-AVQ and 14-AVQ, 18V, DX-77 and DX-88 multibanders.



Yaesu G-5400

ROTATORS:

We carry the extensive range of antenna rotators from YAESU (G250 VHF/UHF through to the massive G-2700) and Hy-Gain (AR40 through to the immense HAM-IV and HAM-V series).

Whether you are turning a single VHF Yagi, our rotatable dipole or a huge stacked array of Long John monobanders, let us assist you with your choice of a reliable rotator.

SCANNERS:

AoR and YUPITERU are recognized as the world's market leaders in the manufacture of specialized wide band communication receivers. This is a market where the application of modern technology has resulted in the greatest advances in coverage, sensitivity, size and performance of these amazing receivers.

A personal interest ensures the Com-Centre Group remains abreast with these advances, offering the widest and most extensive range of scanning receivers. Current models available include AoR 5000, 3000, 8000, 2700 and the AR3030 HF Receiver. Yupiteru MVT-9000, MVT-8000, MVT-7100 and MVT-7000. WELZ VS-1000E, Diamond's Mighty Midget; Uniden UBC Series and the PALCOM Black Jaguar.

Our Group's "Scanner News" keeps a large fraternity of keen sticky-beakers up to date with technology and its application in the N.Z. market.



Welz VS-1000E

ACCESSORIES:

Com-Centre/MRC carries an extensive stock range of accessories from MFJ, ATU's etc.; LOWE (U.K. Receivers); AEA, TASCOS, PayPac, and other specialized Data Comms; AWT (VHF/UHF Linears) and numerous other specialized products pertinent to an Amateur Radio Station.

Active Antennas
Antenna Traps
Antenna Tuners
Baluns
Battery Chargers
Books
Boom Mikes
"Bug" Keyers
Connectors
Capacitors
Clocks
Co-ax Cable
Coaxial Switches
Collinear
Converters
CW Filters
Data Terminals
Desk Mikes
Discone
Dualbanders
Dummy Loads
Duplexers
Ext. Speakers
Filters
Flex-whips
Folded Dipoles
Handhelds
Headphones
Helical Antennas
HF Transceivers
HF Linears
Hot Rods
J-Poles
Ladder Cable
Lanacote
Linear Amplifiers
Log-Periodics
Low Pass Filters
Magnetic Mounts
Memory Units
Microphones
Mobile Antennas
Modems
Monoscopes
Morse Keys
Multimeters
Noise Bridges
Packet Gear
Phone Patches
Power Supplies
Plugs
Receivers
Remote Kits
Rotor Bearings
Rotators
Rotatable Dipole
RTTY Equipment
Satellite R'vers
Scanners
Scantennae
Sig. Gens
Software
Switches
SWR Meters
Telescopic Whips
Test Equipment
Transceivers
Tribanders
UHF Linears
UHF Transceivers
Used Equipment
Vertical Antennas
VHF Linears
VHF Transceivers
Vox Mic/Piece
Whip Antennas
Wire Antennas
Wireless Mikes
X-tal Filters
X-Polarized Yagis
Yagis

And that's not all! Pre-owned equipment turns over so quickly we usually have examples of most of the above on our shelves all the time. Specific items of pre-owned equipment may not be in stock.

COM-CENTRE 195 New Windsor Road
P. O. Box 19-558, Auckland
Ph: 09-627 0084 Fax: 09-627 1613
INTERNET: Home Pages: <http://www.radioinfo.co.nz>

MAINLAND RADIO 120 Warren Crescent, Hillmorton
P. O. Box 37-163, Christchurch.
Ph/Fax: 0-3-338 0077
Email: comcent@radioinfo.co.nz

NOTES

THE NZART RECIPROCAL LICENSING BUREAU

With appropriate licences and approvals, New Zealand radio amateurs may operate in some overseas countries. This is possible through "reciprocal agreements" between governments, through "Commonwealth recognition", or "guest licences". These three arrangements are distinctly different and apply in different countries in different ways.

It can be a lengthy business to get approval to operate in some countries. A residential qualification of months may be needed. Some countries prohibit portable and hand-held operation and may require that the station installation be inspected and tested. Procedures, rules and bands available vary considerably.

Council have appointed Russ Garlick, ZL3AAA, as the co-ordinator for the "NZART Reciprocal Licence Bureau." Should you contemplate an overseas trip, an early enquiry could assist you to obtain overseas operating privileges. Russ keeps information on the requirements and procedures that a ZL radio amateur should follow to operate in many countries. He can supply the address of the licensing authority with whom you should correspond in most countries, and the address of the IARU amateur radio society. It will be appreciated that a long lead-time is necessary in your dealings with overseas administrators.

Finally, it would be appreciated if you could provide Russ with copies of licences, regulatory brochures, etc., when you return, so that your experience can be used to assist others who travel.

The address is: Mr R. A. Garlick, ZL3AAA, 23 Lydia Street, Grey-mouth. Remember to include your NZART membership number or a *Break-In* label.

To obtain an Australian Amateur Visitors Licence

To operate amateur radio in Australia, make application in person to any office of the Department of Communication who have offices in all main cities. A licence to operate will be issued "over the counter". The Department has available an information brochure (DOC 517) *Guide to Amateur Radio operators visiting Australia*, it has useful items.

The applicant is to present their current and valid licence held, or a copy of the licence certified to be true and correct by a person authorized to administer Oaths in the country of issue. A fee is charged. No prior application is necessary.

Providing documentation is in order there should be no difficulties in obtaining a licence by bona-fide visitors.

The kind of licence issued would be the equivalent of the applicants home licence. The operation of the licence must conform to Australian amateur band conditions and radio regulations.

To obtain a USA Amateur Radio visitors operating permit

New Zealanders who hold a valid operating Amateur licence issued by the New Zealand authority may apply for a permit to operate in the USA and the US possessions under a reciprocal agreement between our countries. There is no fee for the permit.

Application

Application form FCC 610A is available from the Bureau. A photocopy of your valid licence must be included in the application form to the FCC. The permit is valid for one year unless your home licence expires sooner. Apply at least 60 days in advance. The USA licence is renewable. Apply to Federal Communication Commission, Gettysburg, Pennsylvania 17325, USA. An address in the USA must be given (this can be a bank, ham friend, motel etc.).

Identification on the Air

You will sign your home (native) call, plus the Morse "/" or phone "portable", followed by the representative prefix of the call area where you are allocated (for example, ZL1AAA/W1 and ZL3ZZZ/KP4). At least once during each contact with another amateur station, you must give your geographical location (in English) as nearly as possible by city and state, or US possession.

Frequencies and Transmitter Power

You will have all the privileges that you have in your home country as long as they do not exceed the privileges of the Amateur Extra Class licence of the USA.

Guest Licences

New Zealand licensed operators can obtain a guest licence in the Republic of South Africa and Hong Kong.

Visitors to New Zealand

Intending visitors requiring information can do so from:

NZART Reciprocal Licensing Bureau

Russ Garlick ZL3AAA
18 Harbour Road, Motueka
New Zealand 7161.
Telephone/Fax (03) 528-7319

Visitors are also advised to obtain a copy of the NZART Callbook,

which contains amateur frequencies, band plans, repeater locations, branch information and much other information. Callbook will be of assistance to amateur radio visitors travelling in our country and can be purchased from:

NZART General Secretary
P.O.Box 40-525, Upper Hutt
New Zealand.

The current price is \$NZ20.

Short term

Any overseas amateur visiting New Zealand may be permitted to operate, while visiting this country for up to four weeks, on 144 MHz or above, under the following conditions:

1. No application need be made.
2. No fee is charged.
3. For a period of not more than four weeks.
4. They should be able, if necessary, to satisfy the Ministry of Commerce that they hold a current licence and/or certificate equivalent to the New Zealand Limited or General qualification, valid for the term of their visit.
5. A copy of their current licence and/or certificate must be carried whilst in New Zealand.
6. Usage meets the requirements of the New Zealand Radio Regulations 1987 and conform to the terms, conditions and restrictions applying to amateur apparatus operating in New Zealand.
7. They operate using their home call-sign suffixed by ZL1, 2, 3, 4 as appropriate.

NOTE: Visiting amateur radio operators from countries not having formal reciprocal agreements with New Zealand may also operate HF bands up to 12 months. A permit is necessary from the Ministry of Commerce. Application and requirement information is available from the Bureau. A two-month lead time is required by the Ministry of Commerce to consider this class of licence.

CEPT Licensing

New Zealand amateur radio licences are now accepted by a reciprocal agreement with European Conference of Postal and Telecommunications Administration (CEPT).

Countries in this administration are: United Kingdom, Germany, Switzerland, Turkey, Yugoslavia, Vatican, Austria, Belgium, Czechoslovakia, Cyprus, Denmark, Finland, France, Greece, Hungary, Ireland, Iceland, Italy, Liechtenstein, Luxembourg, Malta, Monaco, Norway, Netherlands, Poland, Portugal, San Marino, Albania, Bulgaria, Peru, Israel.

New Zealand has implemented CEPT recommendation TR/61-01 and accordingly amateur radio operations may operate in any of the CEPT countries. No application or permit is necessary for visitors temporarily (two months) in these countries. For longer periods up to 12 months, providing the New Zealand licence is valid, it would be wise to seek advice from the licensing authority. Before departure ensure that your New Zealand licence has been endorsed to CEPT regulations by the Ministry of Commerce Radio Division. While operating in CEPT countries the call-sign format is: that host country call-sign, stoke, the ZL call-sign. For example GM/ZL3 ..., OE/ZL2 ..., SM/ZL1 ..., DL/ZL4 ..., etc. Your valid New Zealand licence and current receipt of fee must be carried.

The visitor is advised that radio regulations vary in these CEPT countries and it is prudent to seek authoritative advice on regulatory matters such as frequency allocations. New Zealand Novice licences do not qualify for CEPT reciprocity: Limited and General licences only are acceptable.

The Reciprocal Licensing Bureau can supply the addresses of the licensing administrations in CEPT countries.

British Commonwealth Agreement

Holders of valid amateur certificates issued in Australia, United Kingdom, Canada, Cook Islands, India, Niue, Papua New Guinea, Zimbabwe and Irish Republic.

No prior application is necessary. A personal application should be made to an office of the New Zealand Ministry of Commerce and a licence will be issued immediately over the counter. Applicants must submit:

1. A valid copy of the operating licence which must indicate the morse speed at which the applicant qualified.

2. A New Zealand postal address where all correspondence can be sent.

3. For British Commonwealth recognition the appropriate licence fee is payable based on length of stay in New Zealand.

Applicants with less than 12wpm morse qualification will be granted a Limited licence. Higher qualifications can be obtained by passing the appropriate examination in the usual way. Applicants with 12wpm or higher morse speed qualifications will be granted a General licence.

The New Zealand Radio Regulations governing amateur band operations must be adhered to.



by
ROHAN WAHRLICH
ZL1CVK

The aim is to record and report persistent non-amateur activities found in our allocated bands in order to effect their permanent removal.

consists of a small group of enthusiasts who regularly record and report any intruder that they discover in the course of their normal radio activities. The basic information required can be seen on the accompanying report form. Most reports are sent in monthly to the Co-ordinator. There is also a weekly Monitoring Service Net which operates on 3.705 MHz each Sunday night at 2130 New Zealand time using the special call-sign ZL6IW. The Monitoring Service Co-ordina-

The Service relies heavily on reports from amateurs for its continued effectiveness. It takes little time to note down a few details and pop them in the post. All enquiries and reports are answered or acknowledged promptly.

A signal identification tape cassette and booklet is available on request.

The NZART has provided sophisticated and up-to-the-minute equipment for its Monitoring Service and we can provide accurate information on nearly all intruders found.

Our bands have been hard won—you can help NZART and IARU retain bands for our exclusive use. So please participate.

R. M. Wahrlich ZL1CVK
Monitoring Service
Co-ordinator



REPORTER _____

SUMMARY OF REPORTS FOR: _____

[illegible]

by
ROY SYMON
ZL2KH

Details of stolen equipment to be notified to:

R. E. Symon ZL2KH
25 Annadale Street, New Ply-
mouth 4601
Telephone: (06) 758-2156.

This is to be in writing and to include all relevant details such as: make, model, where and when

stolen, and a copy of the notice from the Police verifying that the theft has been notified to them.

By Packet , messages should be sent to: ZL2DJ@ZL2AB (Bill ZL2DJ will then pass on the information to me.

Any notification made to me by telephone must be confirmed as soon as possible, in writing, as accurate records are a necessity and help to prevent malicious or false reports getting into the system.

There should be a declaration from the owner that the equipment belonged to them and that, to the best of their knowledge, all the details supplied are true and correct.

A lot of the details I find necessary will not be published. The lists will only show the make, model, serial

number, date stolen; whereas I would need to know the location, owner's name and address, Police station to which notification was made, etc.

Lists of stolen equipment will be published in *Break-In* with regular updates as and when necessary. Complete lists will be provided, on request, both to Branches and individual members—as well as lists to holders of junk sales, to dealers, and the like. Such requests should be accompanied by a stamped and addressed envelope.

I have compiled a cross-indexed database so that any parameter can give a match or access—and it is possible to give an answer re listing or otherwise over the phone in a similar manner to that given to people purchasing a car—all care and no responsibility though as the list

could never be guaranteed as being complete. I would merely be able to state that a particular serial number did or did not appear on the list.

The aim of keeping this register is to make stealing amateur equipment unattractive (or even downright repulsive) to the stealer; to prevent amateurs from purchasing stolen equipment and subsequently having it confiscated; and to recover stolen equipment for the rightful owner. The temptation to buy a very cheap rig that has fallen off the back of a truck should be resisted at all times—the next gear stolen could be **YOURS!**

Please notify me, as soon as possible, of any stolen equipment that is recovered—it can then be withdrawn from the register and will help me measure the success of the scheme.



Where do I fit in?

As a radio amateur, your NZART Membership is vital to all of us. Please take time to read this section.

Amateur Radio is an activity requiring international co-ordination both in operational and in radio frequency spectrum occupancy matters. This is achieved through a variety of organizations.

Membership of NZART acknowledges the importance to the continuance of amateur radio in New Zealand of democratic representation by amateurs to government, and liaison between NZART and overseas amateur radio societies.

ITU—the International Telecommunication Union

The ITU is a United Nations Agency. "Big M" Members are countries. New Zealand is a Member and the Ministry of Commerce is the New Zealand Administration.

Through its International Radio Regulations, the ITU allocates radio services to specific frequency bands. Member states are required to recognize these treaty provisions when licensing services to operate on specific frequencies within their own regulations and national boundaries. The ITU Radio Regulations define the Amateur Service and the Amateur Satellite Service setting down operating requirements.

Frequency band allocations and the International Radio Regulations themselves are reviewed at ITU World Radio Communication Conferences (WRC).

The New Zealand Radio Regulations reflect the International Radio Regulations.

The International Amateur Radio Union (IARU)

The IARU is a "small n" member of the ITU where it represents the Amateur Services. It is recognized by administrations as the appropriate body to make recommendations on amateur radio issues. The IARU is permitted to present papers for the information of ITU conferences. The IARU is a worldwide voluntary federation of some 146 amateur radio societies, founded in 1925. New Zealand has been a member since 1929. The prime purpose of the IARU is the protection of the Amateur and Amateur Satellite Services.

The IARU is controlled by an

Administrative Council (AC) comprising a President, Vice-President, and two representatives from each of the three Regions:

Region I covers Europe, Russia and Africa,

Region II the Americas, and

Region III the remainder including New Zealand.

One society provides the International Secretariat (IS), administrative services and the Secretary, currently this is the American Radio Relay League (ARRL).

The business of IARU is transacted at triennial regional conferences arranged in sequence so that one is held each year. The IARU member-societies of the Region meet at these regional conferences to discuss common problems, to find solutions, to determine policy, and promote international amateur radio.

NZART is a founder and active member of IARU Region III. Founded in 1968, the IARU Region III Secretariat is in Tokyo. Between conferences, the affairs of IARU Region III are attended to by Directors who are elected at the region's triennial conference.

NZART

Founded in 1926, NZART is the New Zealand radio amateur's society. A member of the IARU, NZART represents the interests of the Amateur and Amateur Satellite Services. The IARU Constitution recognizes only one member-society per country.

NZART is recognized by and makes representations to the New Zealand Administration (Ministry of Commerce) so influencing the official New Zealand policies.

NZART also makes presentations to IARU Regional Conferences, and can influence IARU policies. The next IARU Region III Conference is at Beijing, China, in August 1997. NZART will present papers to that conference giving the New Zealand national society's views on many issues.

IARU representatives at ITU conferences

The IARU is represented at ITU conferences by a selected team of specialists in amateur radio affairs drawn from IARU societies worldwide.

For some important ITU confer-

ences, a representative of the Amateur Service is included in national delegations from Member countries. NZART financed an Amateur Services representative in New Zealand's delegation to WARC-79 and WRC-92.

The International Radio Regulations

A copy of the text of the regulations pertaining to Amateur Radio can be obtained on request from NZART Headquarters. A full copy of the Radio Regulations is available from the ITU, Geneva. Please be aware that the Radio Regulations are being revised, renumbered and reprinted. Also a full copy occupies several volumes and is expensive.

The International Radio Regulations do not of themselves regulate radio amateurs. With the status of an international treaty, they set out what administrations are expected to impose by their own national regulations.

International problems for amateur radio

All classes of radio service compete for their share of the radio frequency spectrum. Most services wield strong influence at ITU conferences. Decisions made there are affected by many factors, political, economic and social. At times the conference atmosphere is hostile to amateur radio.

Some decisions take many years to implement. The patient pursuit of long-term policies is needed to ensure the future welfare of the Amateur and Amateur Satellite Services.

The cost of this continuing vigilance is high. It comes from the radio amateurs in national societies and from the devoted voluntary efforts by many amateur radio specialists. A small part of your NZART subscription is remitted to IARU Region III each year to help fund international activities.

Remember, there is no actual security for the Amateur or Amateur Satellite Service. Constant vigilance, with time and money to protect our regulatory provisions are needed. Your continuing support is needed.

Further information

Enquiries on international radio matters are welcome at NZART Headquarters.

IARU

Administrative Council

President: Richard L. Baldwin W1RU

Vice-President: Michael J. Owen, VK3KI

Secretary: Larry E. Price, W4RA

Region I:

Chairman: L. v. d. Nadort PA0LOU

Secretary: John Allaway G3FKM

Region II:

President: Alberto Shiao HK3DEU

Secretary: Pedro Seiderman YV5BPG

Two Directors from Region III: (Region III rotates its Directors as members of the Administrative Council).

IARU International Secretariat

Address: PO Box 310905, Newington, CT 06131-0905, U.S.A.

Secretary: Larry E. Price, W4RA.

IARU Region III

Secretary: Keigo Komuro, JA1KAB. Box 73, Toshima, Tokyo 170-91, Japan.

Location: Matsuoka Bldg. No. 2, 1-14-5 Sugamo, Toshima, Tokyo 170, Japan.

Chairman: Fred Johnson ZL2AMJ, 15 Field Street, Upper Hutt, New Zealand.

Directors:

Young-Soon Park HL1IFM, Korea.

David Rankin 9V1RH/VK3QV, Singapore.

Yoshiji Sekido JJ1OEY, Japan.

Sangat Singh 9M2SS, Malaysia.

Monitoring System

Co-ordinators:

International: R. E. Knowles ZL1BAD

Region I: Ronald Roden G4GKO/4X8RRn

Region II: Malcolm C. Hamon VE3KXH

Region III: Rohan Wahrlich ZL1CVK

International Beacon Project

International Co-ordinator: John G. Troster W6ISQ

Region III: Jamie Pye ZL2NN

**Tell our Advertisers you saw it
in Call Book!**

VIDEO TAPE LIBRARY

Listed below are current titles of video tapes held in the Headquarters video tape library for loan to Branches. The only charge is for postage. Each tape weighs approximately 280gm. Please check your zone rate with NZ Post and send a cheque for the correct amount with your requests.

Remember, a quick turnaround of tapes is essential for the scheme to operate. Don't put the tapes away in a drawer after your Branch meeting. Have it in the post the same evening. One Branch held a tape for six months and one other circulated among Branches without advising Headquarters.

Titles and Details are:

1. *All China RDF Competition*—a serious 30 minute look at Amateur Radio Direction Finding—an official sport in China.

2. *The Happy Flyers Techniques of RDF*—a 26 minute Audio/Visual presentation of the theory and techniques for VHF Radio Direction Finding.

3. *The Aerial Circus with Dud Charman G6CJ*—45 minutes. Verification of the theory of operation of

a variety of VHF and HF antennas. See the theory confirmed by means of scale model antennas.

4. *Amateur Radio's Newest Frontier*—30 minutes. A recent production from ARRL. Looks at the Radio Amateurs' involvement in space.

5. *NAREC 50*—a 60 minute production by Branch 24. Looks at the Napier Conference and the 50th Anniversary of AREC.

6. *Communications—The Hidden Revolution*—135 minutes. An address and demonstration by the Engineer-in-Chief, New Zealand Post Office, on modern communications techniques and methods.

7. *The Integration and Launch of AMSAT OSCAR-10*—a 35 minute preview of the preparation and launch of OSCAR-10 by Werner Haus DJ5KQ.

8. *Packet Radio Primer*—a 30 minute introduction to packet radio for beginners. A good Branch meeting tape.

9. *The Wonderful Wide World of Amateur Radio*—Produced by JARL, a 27 minute look at amateur radio in Japan.

10. *Bill Orr W6SAI Whakatane*

Conference Opening June 1988—20 minutes.

11. *1987 Dayton Hamvention KG0P production*—30 minutes.

12. *ARRL's New World of Amateur Radio, 1988*—(via W6SAI).

13. *W6SAI Sunday 5-6-88 Lecture Linear Amplifiers*

14. *Component Identification ZL1TOF*—18 minutes.

15. *Launch Ariane IV 15-6-88*—Vibration Test and Integration of OSCAR-13.

16. *RSGB's Amateur Radio for Beginners*—43 minutes

17. *Waiting for the Big One*

18. *Fuji-2 JAS-1*—Japanese Amateur Satellite 1B

19. *Ham Radio in Space*—30 minutes—ARRL

20. *SAREX—Shuttle Amateur Radio Experiment*—19 minutes—ARRL

21. *"More than Radios" from Zman Productions*—this video is a very special message to amateur radio operators. It is a strong emotional video and not like any other

video you have seen about amateur radio

22. *Getting started in Packet Radio*—from CQ Communications Inc. This video will help de-mystify the exciting but sometimes confusing world of Packet Radio

23. *Getting started in Amateur Satellites*—from CQ Communications Inc. Find out how to locate and track ham satellites with ease. A video filled with easy to understand advice and tips that can't be found anywhere else.

24. *Dayton Hamvention 1996 by ZL1TGC.*

25. *ZL8RI DXpedition, May 1996 (Roaul Island).*

26. *ARRL Video Training Courses*—instruction courses for Technicians, General, Advanced American exams. Each course has instruction in theory and operating techniques, together with a course book and computerized exam review software. Three 180 minutes tapes in each course. Good for individual study or classes.

Applications to the General Secretary, NZART, PO Box 40-525, Upper Hutt 6415.



To the General Secretary NZART
PO Box 40-525, Upper Hutt 6415



CHANGE OF ADDRESS NOTIFICATION

Name: _____ Callsign: _____ Date: _____

Old Address:

New Station Address:

Post code: _____

Which address do you wish to appear in

Call Book? ☐ Station ☐ Postal ☐ Both
(Please tick selection)

Break-In postal address (if different):

Post code: _____

Membership benefits include the automatic inclusion of transmitting callsign holders address details in *Call Book* (published annually).

If you DO NOT wish your details published please sign below.

I DO NOT want my address details published by NZART _____

REMEMBER: If you change address you must notify the nearest office of the Ministry of Commerce, Radio Operations, AND the General Secretary NZART.

Please post this form to the General Secretary NZART at the above address.

AMATEUR RADIO EXAMINATIONS

General

The amateur service is defined in the Radio Regulations as: A radio-communication service for the purpose of self training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.

Amateur operators are required by provisions of the Radio Regulations to hold an appropriate qualification before they may be issued with an amateur radio station licence.

There are three grades of Amateur Operator's Certificate as follows:

General Grade; Limited Grade; Novice Grade.

The examination for an Amateur Operator's Certificate is specified in the Radio Regulations.

Examination Structure

The examination comprises three sections: A, B and C.

Section A comprises a written examination in the principles of electricity, radiotelegraphy, and radiotelephony, and in the adjustment and operation of radio apparatus used in a typical amateur radio station.

Section B comprises a written examination in such of the Radio Regulations, operating procedures, service codes and abbreviations as are applicable to the amateur service.

Detailed descriptions of the topics covered in Sections A and B are contained in Appendices below.

Section C is a morse operating test, both sending and receiving.

Requirements for Certificates

For a General Certificate, a pass at General/Limited level in Section A is required, with a pass in Section B, and with a 12 words-per-minute pass in Section C.

For a Limited Certificate, a pass at Limited level in Section A is required and with a pass in Section B.

For a Novice Certificate, a pass at Novice level in Section A is required, with a pass in Section B, and with a 6 words-per-minute in Section C.

Taking the Examination

Section A and Section B (written) are conducted on behalf of the Ministry of Commerce (Radio Operations Group) by the Examination Division of NZART.

Sections A and B may be taken together at one scheduled examination session. Alternatively, each may

be taken at different examinations sessions in either order.

The time allowed for the written portion of the examination is three hours, with an extra reading time of ten minutes irrespective of whether one or two sections are being taken.

Section C (Morse Test) is conducted by the NZRFS.

The Morse test may only be attempted when a pass in both Sections A and B have been recorded at the Novice grade level or at the Limited grade level.

The Morse operating test is in two parts, sending and receiving. Each part will last for three minutes, and will contain both figures and letters.

The sending test is to be by hand, and the receiving test is to be written.

Examination Pass Requirements

Section A (Radio Theory) is in the form of a multiple-choice question paper of 80 questions, each question having four possible given answers, of which only one is correct.

Forty correct answers are required to obtain a pass for the General and Limited grades, and 24 correct answers are necessary to obtain a pass in the Novice grade.

Section B (Regulatory) comprises 30 multiple-choice questions, each question having four possible given answers, of which only one is correct.

Fifteen correct answers are required to obtain a pass in all grades.

Section C (Morse test): two errors are allowed in each part of the test, with three blemishes in the received copy being counted as an error. A blemish is regarded as any patched or otherwise imperfect character resulting from guesswork or bad writing.

A pass at a speed of 12 words-per-minute is required for the General grade, and at 6 words-per-minute for the Novice grade. A word is equivalent to five letters and a figure is equivalent to two letters.

Date of examination

Examinations for written Sections A and B of the Amateur Operator's Certificate are conducted on the first Saturday in March and September between the hours of 9.00 a.m. and 12.10 p.m.

Morse tests for Section C are held during the morning of the first Wednesday of every month by the NZRFS.

Applications for examination

Application forms for Sections A and B are available from any New Zealand Radio Frequency Service Office, or from the secretary of any Branch of NZART or from the Examination Division. Examination forms must reach the NZART Examination Division, P.O.Box 40-525, Upper Hutt 6415 no later than 5.00pm on the February 1 for the March examination and not later than 5.00pm on the August 1 for the September examination. No entries can be accepted after these dates.

Applications for Morse testing should be made directly to the nearest New Zealand Radio Frequency Service Office.

Examination Fees

Examination entry fees must accompany the application. Details of the fee structure are available from the above sources.

Full and Partial Passes

A Partial Pass is granted for a pass in either Section A or Section B, but not both. A partial pass is valid for 13 months from the date it was granted.

A Full Pass is recorded when passes in both Sections A and B are held.

Partial passes will not be granted for section C only. That is, a pass in Section C cannot subsist without a supporting pass in both Sections A and B.

Examination Result Notifications

Following an examination each candidate will receive direct from the Examination Division an Examination Result Notification which will indicate the sections taken, the result obtained in each section, and a positive statement as to whether a full pass has been obtained in a particular certificate.

Where a partial pass has been obtained, a positive statement will be made indicating the date when the partial pass lapses.

Formal Certificates

Formal Amateur Operator's Certificates will not be issued automatically to those persons who obtain a full pass in any grade.

Formal certificates will only be issued on request to the New Zealand Radio Frequency Service and upon payment of the appropriate fee.

It should be noted, however, that an examination result notification

which carries a statement that a full pass has been obtained in any of the three certificates will be sufficient evidence on which an application for an amateur radio licence for the appropriate grade can be made.

Examination Recounts

Applications for recounts of the marks awarded in Sections A or B must be made to the NZART Examination Division no later than one month after the examination in respect of which the mark in question was awarded.

The prescribed fee of \$10.00 must accompany the application for recount.

Copies of Answer Scripts

Candidate's answer scripts can be returned upon making a request to the NZART Examination Division one month after the examination. There is no charge for this service, but a self-addressed post paid envelope of suitable size must be enclosed with the request.

Specimen answers are available to candidates on the same conditions as set out in the previous paragraph.

Previous Examination Papers

Copies of previous examination papers may be obtained from the NZART Examination Division at a cost of \$5.00 per set.

Exemptions

The holders of the New Zealand First or Second Class Radio Telegraph Operator's Certificate or their equivalent are granted full exemption. Holders of other Radio Certificates may be granted exemption from Section A. Applications for exemption must be made to the NZART Examination Division accompanied with copies of the documentation the exemption is based upon.

Licensing of Amateur Stations

Applications for licences to operate amateur radio stations should be made to the nearest New Zealand Radio Frequency Service Office, accompanied by evidence of the certificate held in the form of either an examination result notification or a formal certificate.

Application may also be made for a specific radio call-sign, which if not already allocated, may be issued on payment of the specified fee.

Study material

The following text books are suggested for study purposes:

Radio Communication Handbook. Published by RSGB.

Hamology Amateur Radio Course.

Basic Radio Training Manual. An NZART publication.

A Guide to Amateur Radio. Published by RSGB.

NZART Call Book.

The above books are available from:

NZART Publication Department
PO Box 40-525
Upper Hutt 6415.

The Radio Regulations and amendments. Available from Bennetts Bookshop, Bowen House, Corner Lambton Quay and Bowen Street, Wellington.

Study Courses

NZART branches often conduct courses of study for the amateur operator's certificate. Contact the nearest NZART branch secretary for details.

The Open Polytechnic of New Zealand has a correspondence study course for the Amateur Operator's Certificate. The address is:

The Open Polytechnic of New Zealand, Private Bag, Lower Hutt.

Further Enquiries

Please direct enquiries about the Amateur Radio Examination to: NZART Examination Division, PO Box 40-525, Upper Hutt 6415. Telephone/Fax (04) 528-2170.

Appendices

Appendix A

The Syllabus for Section A

Elementary Electricity and Magnetism

Elementary theory of electricity; conductors and insulators; electrical units; Ohm's Law; resistors in series and parallel. Power. Permanent and electromagnets and their use in radio work. Batteries. Inductors; self and mutual inductance; inductors used in transmitting and receiving circuits. Capacitors; construction of various types; serial and parallel connection. Simple calculations.

Elementary Alternating Current Theory

Alternating currents and voltages. Alternating current theory incorporating circuits with inductors, capacitors, and resistors. Impedance. Resonance. Coupled circuits. Acceptor and rejector circuits. The transformer; impedance and turns ratio; eddy currents.

Thermionic Valves and Semiconductors

Characteristics and essential construction of transistors, semiconductor diodes, thermionic diodes, triodes, multi-electrode valves. Use of semiconductor devices and valves as oscillators, amplifiers, detectors, and frequency changers. Distortion; harmonics; push-pull operation. Power rectification; stabilization and smoothing; typical power supplies for low power transmitters and receivers.

Radio Receivers

General principles of operation of TRF and superheterodyne receivers including double conversion systems on MF, HF, and VHF. Detectors, mixers, local oscillators, and filters. BFO, AGC, negative feedback, selectivity, sensitivity. Reception of AM, FM, SSB, CW transmissions.

Radio Transmitters

Oscillator circuits, crystal, and VFO. Buffers, multipliers, power amplifiers. Tuning methods, neutralization. Modulation; AM, FM, SSB generation; filter and phasing methods. Keying methods; key click reduction. Microphones. Transmissions at MF, HF and VHF.

Propagation

Nature and propagation of radio waves on MF, HF, and VHF. Ionospheric and tropospheric conditions and their effects on propagation.

Antennas

Common types of receiving and transmitting antennas. Transmission lines. Directional systems. Antenna coupling to lines and transmitter. Matching. Dummy loads. Standing waves.

Interference

Frequency stability; avoidance of harmonic radiation and of interference by shock excitation. Means of preventing spurious emissions. Dangers of over-modulation. Devices for reducing interference to and from nearby radio receivers, television receivers, and computers.

Measurements

Measuring instruments. Measurement of frequency. Measurement of current and voltage including audio and radio frequencies. Measurement of power input to final stage of a transmitter. Consideration of peak envelope power. Use of the cathode ray oscilloscope for the examination of waveforms. Measurement of resistance, including bridge methods.

Safety

Safety precautions and resuscitation practices.

Appendix B

The Syllabus for Section B

The Radio Communications (Radio) Regulations 1993.

Selected "Q" Codes (NZART Call Book).

Service abbreviations (NZART Call Book).

Operating procedures as outlined in publications from RSGB, ARRL and NZART, which are in common use in the Amateur Service.

Radio Operations—Ministry of Commerce Offices

Office	Delivery Address	Postal Address	Telephone No	Fax No
Head Office Radio Operations Wellington	Ministry of Commerce Building, 33 Bowen Street Wellington http://www.moc.govt.nz	PO Box 2847	(04) 472-0030	(04) 473-2489
Whangarei Auckland	Unit C, 148 Bank Street, Whangarei Open Technology House, Cnr Newton Road and Abbey Street, Newton, Auckland	PO Box 449 PO Box 68-217 Newton	(09) 360-3500 (09) 378-8537	(09) 438-8663 (09) 378-8344
Hamilton Rotorua	512 Grey Street, Hamilton 9 Haupapa Street, Rotorua	PO Box 982 PO Box 847	(07) 834-2958 (07) 346-0370	(07) 834-2961 (07) 346-0372
Tauranga Napier	93 Wharf Street, Tauranga First Floor, Manchester Unity Building, Cnr Kennedy Road and Nuffield Avenue, Mārewa, Napier	PO Box 846 PO Box 4162 Mārewa	(07) 577-9229 (06) 843-5829	(07) 577-6750 (06) 843-5827
New Plymouth Palmerston North Wellington	3 Gover Street, New Plymouth 1st Floor, 328-330 Broadway Avenue, Palmerston North 70 Bloomfield Terrace, Lower Hutt	PO Box 217 PO Box 5063 PO Box 31433	(06) 758-8139 (06) 356-6710 (04) 566-5537	(06) 758-8137 (06) 356-9110 (04) 566-5853
Nelson Christchurch Timaru	1st Floor, 42 Halifax Street, Nelson Unit B, 52b Mandeville Street, Riccarton, Christchurch Service from Christchurch	PO Box 997 PO Box 8562	(03) 548-2446 (03) 343-1240 (03) 684-8120	(03) 546-9293 (03) 343-1219
Dunedin Invercargill	12 Hanover Street, Dunedin 83 Don Street, Invercargill	PO Box 5647 Moray Place PO Box 247	(03) 477-1125 (03) 214-4952	(03) 474-0450 (03) 218-4582

Terms, Conditions and Restrictions Applying to Amateur Radio Apparatus Licence

1. The licence permits the use of radio apparatus to conduct Radio-communication for the purpose of self training, intercommunication and technical investigation other than for pecuniary gain.

2. The emission from amateur radio apparatus for any radiocommunication should be of the minimum bandwidth and power as is necessary to ensure a satisfactory service.

3. Power Limits for Amateur Radio Apparatus:

For Amateur Radio Apparatus the power limit shall be:

i. Novice Grade:

The radio frequency power output shall not exceed 10 W mean power, or 30 W peak envelope power.

ii. Limited or General Grade:

The radio frequency power output shall not exceed 120 W mean power, or 400 W peak envelope power.

4. No licensee of amateur radio apparatus shall use, or permit to be used, any such apparatus for the transmission of international com-

munications on behalf of persons not being authorized amateur radio operators unless such communications are specifically authorized by the countries concerned.

(a) The passing of brief messages of a personal nature on behalf of non-licensed people or organizations within New Zealand is permitted, provided no tolls, fees or other consideration shall be received or collected by the licensee of the amateur apparatus.

(b) The licensee of amateur radio apparatus may permit persons other than qualified amateur operators to use the apparatus to pass brief personal messages under the direct supervision of the licensee. Under no circumstances may persons other than the authorized amateur operators engage in calling or signing-off procedures, or manipulate the controls of apparatus.

5. The licensee is only permitted to use the frequency bands listed below for the grade specified on the front page of the licence.

119.98-120.02 GHz	3 and 9	Limited & General
142-144 GHz	2	Limited & General
144-149 GHz	2, 3 and 9	Limited & General
241-248 GHz	2, 3 and 9	Limited & General
248-250 GHz	2	Limited & General
275-400 GHz	3 and 5	Limited & General

Notes to Amateur Frequency Allocation Chart

1. These bands are available for use by all Amateur licensees at times of natural disaster in connection with international relief operations, subject to the approval of the Secretary.

2. The bands 7.0-7.1 MHz; 14.0-14.25 MHz; 21.00-21.45 MHz; 24.890-24.990 MHz; 28.0-29.7 MHz; 144-146 MHz; 435-438 MHz; 1260-1270 MHz (earth-to-space direction only); 2.4-2.45 GHz; 3.40-3.41 GHz; 5.65-5.67 GHz (earth-to-space direction only); 5.83-5.85 GHz (space-to-earth direction only); 10.45-10.5 GHz; 24.0-24.05 GHz; 47.0-47.2 GHz; 75.5-81 GHz; 142-149 GHz; and 241-250 GHz may also be used for amateur satellite communications.

3. These bands are or may be allocated for use by other services. Amateur licensees may not use them in a manner which interferes with such other services.

4. The frequencies 27.12 MHz (± 163 kHz), 925 MHz (± 4 MHz), 2.40-2.45 GHz, 5.8 GHz (± 75 MHz); and 24.125 GHz (± 125 MHz) are designated for industrial, scientific and medical (ISM) purposes. Amateur licensees operating on allocations within these limits must accept interference from ISM equipment.

5. Allocated for use by amateur licensees on a temporary basis until further notice.

6. Until further notice the following spot frequencies may not be used: 1800 kHz (± 3 kHz); 1860 kHz (± 3 kHz); 10.130 MHz (± 3 kHz). 1850-1950 kHz may not be used in a manner which interferes with navigation uses of those frequencies.

7. Telecontrol and telemetry operation only. Power output is not to exceed 5 W mean power.

8. The band 50-50.15 MHz is allocated for temporary use. Operation is only permitted outside television programme hours.

9. These bands are allocated for use by other primary services and Amateur usage is on a secondary service basis. Users of a secondary service cannot claim protection from harmful interference from users of a primary or permitted service to which frequencies are already assigned or may be assigned at a later date.

10. Services particularly sensitive to other RF energy sources operate in adjacent frequency bands. Amateur licensees will be required to immediately cease transmission in the event of complaints of amateur interference to these services.

11. Power output is not to exceed 25 W EIRP.

6. Amateur Frequency Allocation Chart.

Frequency Band	Notes	Use Restricted to Certificate holders of
1800-1950 kHz	3 and 6	General
3.50-3.90 MHz	1 and 3	General
3.525-3.625 MHz	1 and 3	Novice
7.00-7.10 MHz	1 and 2	General
7.10-7.30 MHz	3 and 9	General
10.10-10.15 MHz	1, 3, 6 and 9	General
14.00-14.35 MHz	1 and 2	General
18.068-18.168 MHz	1	General
21.00-21.45 MHz	1 and 2	General
21.10-21.20 MHz	1 and 2	Novice, General
24.890-24.990 MHz	1 and 2	General
27.12 MHz	4 and 7	All Grades
28.00-29.70 MHz	2	General
28.10-28.60 MHz	2	Novice
50.00-50.15 MHz	3 and 8	Limited & General
51.00-53.00 MHz	3	Limited & General
144.0-146.0 MHz	1 and 2	All Grades
146.0-148.0 MHz	3	All Grades
430-449.75 MHz	2, 3 and 9	Limited & General
614-622 MHz	3 and 9	Limited & General
922-927 MHz	3, 4, 5, 10 and 11	Limited & General
1.24-1.30 GHz	2, 3 and 9	Limited & General
2.396-2.45 GHz	2, 3, 4 and 9	Limited & General
3.30-3.50 GHz	2, 3 and 9	Limited & General
5.65-5.85 GHz	2, 3, 4 and 9	Limited & General
10.0-10.5 GHz	2, 3 and 9	Limited & General
24.00-24.05 GHz	2 and 4	Limited & General
24.05-24.25 GHz	3, 4 and 9	Limited & General
47.0-47.2 GHz	2	Limited & General
75.5-76.0 GHz	2	Limited & General
76.0-81 GHz	2 and 3	Limited & General

Additional Note Regarding the Band 50 to 54 MHz

A letter from the General Manager (Communications Division), Ministry of Commerce, published in *Break-In*, page 4, October 1990, gives details of the approval procedures for use of the band 50 to 54 MHz by New Zealand radio amateurs. If you intend to operate on this band, please refer to that letter and adhere to its provisions.

... America's Best



TEN-TEC

Antenna systems by



KLM

Quality Amateur Radio kits

QRP CW transceivers 80, 40, 30, 20 m superb specs. 6 m transverters; 9 band SW receiver; Desk microphone; VOM multimeter; SWR bridge and RF Wattmeter 20/200 W; 300 W dummy load; High power variable capacitor; 2 m 15 memory transceiver; Budget electronic keyer; Any band direct conversion receiver SSB/CW; Active antenna; 35 W Amp for your HT; 300 W dummy load.

For more information, phone or fax

Ham Radio Direct

New Zealand Agents Ten-TecCushcraft KLM HRO

5-9 Duke Street
Putaruru, New Zealand
Ph (64-07) 883-3055 Fax (64-07) 883-8006

The NZART QSL Bureau is one of a network of bureaux established throughout the world by the IARU to facilitate the exchange of QSL cards between NZART members and radio amateurs and listeners in other countries.

Outward QSL Cards

The service is free to both transmitting and non-transmitting members of NZART—non-members may make use of this service at a cost of **25c per card**. All QSL cards for forwarding to radio amateurs and listeners in New Zealand and overseas countries should be posted to:

**The QSL Manager
NZART QSL Bureau
PO Box 857
WANGANUI**

The **call-sign** of the station to whom the card is addressed should be printed **clearly on both sides of each card**. Sending your card to a DX-station's Manager? Write the Manager's call on the back of the card. (Cards are sorted using the call printed on the back of the card.) If you see fit not to write the recipients call-signs on the back of your cards, it is pointless to carry out the last instruction—we are not clairvoyants! Make sure that the letter V will read V, not U, etc. Remember that English is not the first language of everybody handling and receiving your cards!

Please sort your QSL cards into New Zealand call-district order (ie ZL1-2-3-4, etc), USA and Australian call-district order and all others in alphabetical order: eg A3, EA, ES, EU, G, GM, I, OK, S5, SM, UA, UN, UR, VK1-2-3, etc, W1-2-3, etc, YU, ZL1-2-3-4, 3D, 5W, 9A (USA prefixes are kept together—AA-K-N-W1-2-3 etc). **Please do not separate countries with rubber bands, strips of paper etc.**

Members must enclose a current year **Break-In** label with each posting. After complying with the above, sit back and be patient!

Inward QSL cards

The NZART QSL Bureau provides a **free inward service** for all New Zealand amateurs and listeners.

Collecting cards from the sub-bureaux by members and non-members

Please note that the sub-bureaux are arranged in call-district and a ZL1 living anywhere in New Zealand deals with the ZL1 sub-bureau, ZL2s with the ZL2 sub-bureau, etc. Supply your particular QSL sub-bureau listed below with a supply of **suitable size stamped self-addressed envelopes** to receive your incoming cards. Print your call-sign on the front of your envelopes as each sub-bureau deals only with call-signs, not with operators' names.

Some Branches have special

arrangements for "Branch postings" in place with the appropriate sub-manager. Contact your local Branch secretary for information. (The possible provision of this service is totally the prerogative of the sub-managers and there is no compulsion on any person to be a party to any such collective scheme.) Envelopes should be numbered and "Last Envelope" marked on one so that the recipient knows when to renew the supply.

Any specific requests for forwarding cards should be printed on the back of the envelopes such as "send monthly" or "send when 10 cards" or "send when weighs 200 g", etc.

QSL sub-managers

ZL1

J. Small ZL1KQ, 32 Paddington Street, Glen Innes, AUCKLAND 1106.

ZL2

A. H. Marr ZL2AGY, PO Box 3, GREYTOWN.

ZL3

D. S. Leeming ZL3SL, 228 Maidstone Road, CHRISTCHURCH 8004.

ZL4

D. A. Adams ZL4OZ, 47 Wray Street, DUNEDIN 9001.

Your QSL Card

1. Should not exceed 140x

90mm in size (over-sized cards suffer damage!).

2. Have all the necessary information on one side of the card—if you intend having a two-sided card, make sure your **call-sign** is printed on **both sides**.

3. Use Universal Co-ordinated Time (UTC) (formerly referred to as GMT, also referred to as ZULU time)—NZST or NZ Daylight Time is meaningless to 99.9 per cent of amateurs—and you do want a card back!

4. It is advisable to write out the name of the month to avoid confusion.

5. **Do not correct mistakes, make a new card out.** Altered cards are valueless to the recipient.

Any further information concerning the business of the QSL Bureau, or requests for info on DX station QSL Managers/direct mail addresses (we will do our best to assist!) can be obtained from the QSL Manager at PO Box 857, Wanganui.

PS! Special calls and DX-peditions

If you, or your Branch, put on a special event/contest station using a special call-sign allocation for the duration thereof, or partake in a DX-pedition, please notify the QSL Bureau Manager and supply him with the relevant QSL Manager info!

SHIFTING HOUSE?

REMEMBER TO ADVISE THE FOLLOWING

1. AMATEUR LICENCE

Inform the Radio Inspector at your nearest Ministry of Commerce, Radio Operations (see page 3-6)

2. BREAK-IN DELIVERY

Advise the General Secretary, NZART HQ
PO Box 40-525, UPPER HUTT 6415

of your new address. Mention your Call-sign and Membership Number (see page 3-4).

This advice will be forwarded to the *Call Book* Call-sign Compiler who will amend your *Call Book* listing.

A GUIDE TO VHF AND UHF FOR NEW LICENSEES

Jane Atkinson ZL2QO, Jim Meachen ZL2BHF, Stephen McNeill ZL4HG

This article has been prepared by those listed above on behalf of the Wellington VHF Group, Branch 74 NZART (inc), PO Box 12-259 Wellington, to offer guidance to the newcomer to the wonderful world of amateur radio.

"Sam the Mobile Man" guest appearance courtesy of Sue Lill

© August 1994

Why such an article?

You've just got your licence. Your new rig has arrived today and is ready for use. You turn the power on. So, what do you do?

It can be pretty daunting when you first start out knowing what to say, or what not to say.

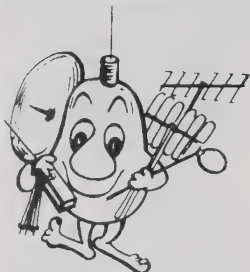
This article is designed to help you through your first few contacts. It's important to remember that there are no fixed rules. Many of the observations that are made in this article are the result of experiences we have had over a number of years, and you must remember that your operating may not necessarily cover what we've been interested in. So be it. This is a guide. Use it as a kind of a *la carte* offering of ideas.

The only way to become familiar with the operating procedures on VHF or UHF is to spend some time listening to the good operators, noting how and why their methods succeed where those of the poor operator do not. It is quite important as newcomers that you should be discriminating in this respect, and not simply mimic what you have heard when going on the air for the first time. To summarize, copy the good operators, and not the bad ones!

How this article is written

The article covers a number of different facets of amateur radio that you are likely to encounter in the VHF spectrum. You'll find these are often the same ideas you'll use on HF, but that kind of operating is beyond the scope of this article. You can find some excellent books on the general topic of operating, and you're encouraged to seek out the information contained therein. Some good examples of operating books, all of which can be obtained from NZART Headquarters, are as follows:

- *A Guide to Amateur Radio*, Pat Hawker G3VA, RSGB, Ninth Edition.
- *Amateur Radio Operating Manual*, R. J. Eckersley G4FTJ, RSGB, Third Edition.
- *The ARRL Operating Manual*, edited by Robert J. Halprin K1XA, ARRL, Third Edition.
- *AREC Manual*, NZART, 1978.



Some terminology

There are lots of words that are used everyday in the world of VHF in amateur radio. Among the most common are as follows:

AM Amplitude Modulation. A method of voice encoding a transmission which is seldom used these days. Specifically the strength of the signal transmitted varies with the strength of the voice signal.

AMSAT Amateur Satellite Corporation. An amateur radio organization promoting and developing the amateur satellite service. Over two dozen satellites have been built by amateurs worldwide and are universally available.

AREC Amateur Radio Emergency Corps. Groups of amateurs within NZART Branches who provide emergency communications in conjunction with other organizations as the situations demand.

ATV Amateur Television. The transmission of video signals by radio amateurs. This transmission can sometimes take place through a special kind of repeater.

Autopatch A device for interfacing a repeater to a telephone line. Such a device responds to audio tones generated by a telephone touch-tone pad connected to the user's rig or microphone.

Break The word used to interrupt a conversation on a repeater, often to indicate there is an emergency.

Call Book An annual publication by NZART that contains amateur call signs, frequency allocations, repeater maps and other vital operating information.

Channel The pair of frequencies, input and output, used by a repeater.

Clear Indicates the end of a contact.

Coverage area the geographic area within which a repeater provides communications (sometimes called the footprint).

CQ A general call made requesting someone to talk to.

CTCSS Continuous Tone Coded Squelch System. (Sometimes known as PL or Private Line.) A sub-audible tone system used when you want to activate just one or a small number of remote receivers.

CW Continuous Wave. Commonly known as Morse code. Used in weak signal or long distance applications and sometimes in conjunction with amateur satellites. This is an "on-off" or dot-dash type of transmission.

Data repeater A repeater specifically designed for use in passing data, rather than voice communications. Of course, it may be used for both.

Digipeater A Packet radio repeater. Packet radio is a form of data transmission. Voice cannot be transmitted through a digipeater.

Dropping out The situation that exists, while you are using a repeater, when your signal does not quite have enough strength to keep the repeater triggered (see "Trigger").

DTMF Dual Tone Multi Frequency. A system often used for repeater control, using two tone frequencies. This control is often achieved by a simple keypad on your microphone or rig.

Duplex A mode of communication in which you transmit and receive simultaneously.

FM Frequency Modulation. A method of voice encoding a transmission, which is frequently used in conjunction with repeaters. Specifically, the strength of the signal transmitted is constant but its frequency varies with the strength of the voice.

FTMAG Frequency Management and Technical Advisory Group. A group that advises NZART on technical matters, particularly those relating to VHF and repeaters.

Full quieting A received signal that contains no noise.

Handheld A portable receiver that is small enough to fit in the palm of your hand.

Handle This refers to your name.

Note, the term "personal" is not generally used in amateur radio.

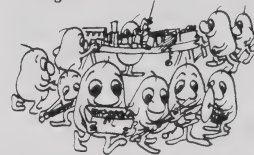
Horizontal polarization The nominal orientation that a radiowave is taken to have as a result of an aerial's physical layout and orientation. Horizontal polarization is by convention very often used in weak signal applications at VHF/UHF.

Input frequency The frequency that the repeater receives on, and also the frequency on which you transmit to the repeater.

Magnetic mount (Also **Mag Mount**) A mobile antenna with a magnetic base that enables quick installation and removal from a car.

Ministry of Commerce Radio Operations Ultimately responsible for the administration of all the radio frequency spectrum in New Zealand.

NiCd (also **Nicad**) A Nickel-Cadmium battery that may be recharged.



NZART New Zealand Association of Radio Transmitters (Inc). New Zealand's national amateur radio society, PO Box 40-525, Upper Hutt.

Offset The difference between a repeater's transmit and receive frequencies. In New Zealand this is plus or minus 600 kHz on the 2 m band and 5 MHz on the 70 cm band.

Output frequency The frequency that the repeater transmits on, and also the frequency on which your receiver receives the repeater.

Over The word used to indicate the end of a voice transmission.

Packet radio A way of transferring data or messages between amateurs across town, about the country or around the world.

Phone patch A device for interfacing the audio input and output of a radio transceiver to a telephone line.

RDF or **DF** Radio Direction Finding. The amateur technique of locating a transmitter.

Repeater trustee Person elected by an NZART Branch to take responsibility for proper operation of a repeater.

Roger The word that indicates all information was received correctly.

SAR Search And Rescue.

Simplex A mode of communications where you transmit and receive on the same frequency.

Sked A pre-arranged radio contact between two or more stations.

SSB Single Sideband. A method of narrow band voice encoding commonly used for long-distance or weak signal communications in both the high Frequency (HF), VHF and UHF parts of the spectrum. Very commonly used in conjunction with amateur satellites.

STSP Repeater Short Term Special Purpose Repeater. A repeater designed for emergency use or during special events.

Tone pad A device that is used to generate a standard set of tones that can be used to control certain functions on a repeater, or remote equipment (see DTMF).

Triggering To activate a repeater by transmitting on its input frequency.

Vertical polarization The nominal orientation that a radio wave is taken to have as a result of an aerial's physical layout and orientation. Vertical polarization is by convention very common in repeater operation at VHF/UHF. Antennas on handhelds when held upright and on cars are vertically polarized.

NZART

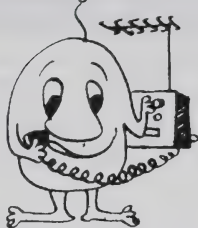
The New Zealand Association of Radio Transmitters (Inc) is New Zealand's representative society for radio amateurs. It provides a wealth of services to assist both the new and established amateurs. It publishes a monthly magazine (*Break-In*) and an annual Call Book. It represents the interests of amateur radio at both the national and international levels. It is controlled by an Executive Council elected by members. It has over 80 Branches throughout New Zealand, and has a membership of over 3000 amateurs.

One of the services that is provided by NZART is the planning of band usage and the national co-ordination of repeaters and beacons. It does this based on the recommendations of its Frequency Management and Technical Advisory Group (FMTAG).

Inquiries about NZART services and membership may be directed to:

NZART Headquarters
PO Box 40-525
Upper Hutt

Establishing a call



There are two accepted ways of establishing contact with another station. The first method is to put out a general call to all stations, known as a "CQ", and to hope that another station responds. The second is to call another specific station by prior arrangement, known as keeping a "sked", or after the other station has just finished a contact or called CQ.

CQ calls are not normally made through repeaters. Instead, stations announce that they are "listening" on the repeater. For example, you might say:

"This is ZL2BHF listening seven-ten."

To start a sked with another station, you will call the other station by its call-sign, followed by your own call-sign, such as:

"ZL2QO, this is ZL4HG."

The station that is being called might have his or her call-sign repeated a few times, just in case they don't hear the single call. You might also be wise to issue your own call-sign in phonetics so that there is no mistake who you are. For example:

"ZL2QO, ZL2 Quebec Oscar, ZL2QO, this is ZL4HG, ZL4 Hotel Golf, ZL4HG."

However, remember that phonetics really only need to be used to clarify who you are in conditions that might make certain letters ambiguous, or where the band is noisy, or where your signal is likely to be weak. Over-use of phonetics is rather annoying, and time consuming.

Answering a call

You answer a CQ or sked call from another station in the same way that you would make the sked call in the first place. For example, in the above instance, where ZL4HG is trying to call ZL2QO, the latter station might answer the call in the following way:

"ZL4HG, this is ZL2QO..."

and the conversation would continue. It's that simple!

How to pass transmission to another station

When you have finished saying what you want to say on one transmission, and you want the other

station to reply, you do so by simply saying the word "over".

Before you say the word "over", you may want to indicate the other station's call-sign, and your call-sign too, in that order. Note that it is not absolutely necessary to give both call-signs at the beginning and end of each and every over, your own call-sign will suffice. But, if you do give the call-sign, you must give the full call-sign, not an abbreviated version. For example, use "ZL2BHF" and not "2BHF" or "BHF".



Letting other stations in

If you are in the middle of a conversation, and a station transmits his call-sign in the pause between transmissions, the next station in the queue to transmit should acknowledge that station and permit him or her to make a call and join the conversation. It is not polite to ignore him and, furthermore, it is rude to acknowledge him but not to let him speak. You never know, the calling station may need to use the repeater immediately. He may have an emergency on his hands, so let him make a transmission promptly.

Joining an existing conversation

If you wish to join a conversation that is already in progress, transmit your call-sign between transmissions. The station that transmits after you drop in your call-sign will acknowledge you, and usually invite you to transmit.

A brief pause, say three seconds, before you begin each transmission allows other stations to participate in the conversation. So don't transmit immediately that the other station stops. If you begin transmitting too quickly, you can prevent other stations from getting in. Also, there might be an emergency, so leave a pause!

Before you join an existing QSO, stop and think, "is it appropriate for



me to join in?". If it's a technical matter and you know something about it, it's probably all right. If it's on a more personal level, it might be better to wait until they have finished before giving a call, unless you know them fairly well. Either way, just give your call-sign and wait to be invited in. Jumping straight in with your comments is no better manners on the air than it is in person.

How to tell when it's your turn to talk

The station with whom you are talking will pass transmission back to you by one of the methods outlined above. Remember the pause before you transmit!

When and how often to give call-signs

A major source of frustration and annoyance to many operators can be the excessive use of call-signs. Take this example:

"ZL4 HG from ZL2BHF, are you parked yet Stephen? Over."

"ZL2BHF from ZL4HG. Yes. Over."

"ZL4HG from ZL2BHF, OK I'll see you later. Over."

"ZL2BHF from ZL4HG, over where, over."

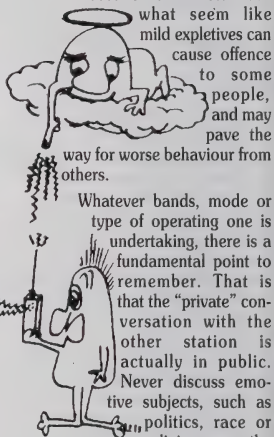
We suggest you identify yourself at regular intervals, say once every ten minutes, as well as at the beginning and end of a conversation.

Standards of language, and topics best avoided

Acceptable language should be used at all times. Even what seem like mild expletives can cause offence to some people, and may pave the way for worse behaviour from others.

Whatever bands, mode or type of operating one is undertaking, there is a fundamental point to remember. That is that the "private" conversation with the other station is actually in public. Never discuss emotive subjects, such as politics, race or religion over the

air to avoid the possibility of giving offence to others. Never give any information over the air which might be of assistance to the criminally inclined, such as the time that a house is unoccupied, dates of holidays, and valuables in the house. Telephone numbers, especially those belong to others, should be handled with considerable discretion.



Unidentified transmissions

Occasionally you may hear a conversation that you think you can enhance with a suitably witty addition, suitably anonymous. Don't be tempted to do so! All transmission must be identified! If you hear someone who appears to be a pirate, or who might perhaps be trying to bait the users of the frequency, don't rise to the bait—just ignore them. They will soon become bored and go away.

List of commonly heard Q Codes

Q Codes were originally developed for use with Morse code, to speed up the sending of commonly-used phrases. They are not strictly necessary when carrying on a voice contact, since it is usually just as quick to use the ordinary English equivalent: eg "Go to six-five-two-five" instead of "QSY six-five-two-five". However, some Q Codes are still used quite a bit on VHF and UHF. The more commonly used ones are:

- QRM Interference
- QRN Static
- QRO High power
- QRP Low power
- QRT Cease transmitting
- QRX Stand by
- QRZ Who is calling? Who is there?
- QSB Fading
- QSO Contact, conversation
- QSY Change frequency, go to
- QTH Location

What a repeater is and how it works

A repeater is a special kind of transmitter and receiver combination that receives a signal and simultaneously retransmits it. A repeater situated on a vantage point such as a hilltop can dramatically increase the range of VHF and UHF communication in hilly areas and for users of low-power transceivers such as handhelds. To prevent the repeater from becoming unusable due to feedback, the receive and transmit frequencies are different. The difference between the two signals is known as the offset or split (see definitions).

To access a repeater, an amateur transmitter has to be set up so that it transmits on the repeater's input frequency and receives on the repeater's output frequency. Most (but not all) repeaters continue to transmit a carrier (known as the "tail") for a few seconds after the input signal ceases, so that the user can check that he or she is actually accessing the repeater. A list of repeater frequencies is given on pages 7-1 and 7-5 of this Call Book.

In New Zealand all repeaters are "open", that is, any licensed amateur

is permitted to use the repeater without necessarily being a member of the local club. This is not necessarily the case in other countries.

Repeater timeouts

Some repeaters incorporate timing devices. These prevent an over from lasting longer than the time that the repeater is set to, usually two or three minutes. If a station transmits for longer than this, the repeater will cease retransmitting after the allotted time is up and a deathly hush will descend upon the frequency. The repeater timer resets when a new transmission begins. Two repeaters that currently incorporate this feature are Motueka 670 and Manawatu 910 (part of the National System).

Repeater alarms

Some of the more sophisticated repeater systems incorporate alarms to warn users of such things as power failure. Usually some kind of tone or signal will appear briefly at the end of each over.

The signal that appears after each transmission on Blenheim 695 is not an alarm but an identifier. It transmits the characters "BM" in Morse.

If you hear an alarm signal, first make a note of what type it is. If it is a digitized voice, what it is saying? Notify the repeater trustee as soon as possible (within reason—phone calls at 3 am are unlikely to be appreciated). If you don't know who the trustee is, get in touch with a committee member of the branch responsible for the repeater.

Most mains-powered repeaters have battery backup systems so that they can keep going if the power fails. As the repeater might have to remain on emergency power for some time, it is best not to use the repeater unless you really need to. Conserve emergency power for emergency use.

DTMF and CTCSS control codes

Some repeaters will respond to DTMF tones (see your transceiver manual to determine if your set can generate these tones). These fall into two main types: codes for use only by trustees for controlling repeater functions, and codes for use by amateurs in general. The most common in the latter group is the signal strength report generator. If a certain sequence of DTMF tones is transmitted, the repeater will respond with an indication of the signal strength it has received. The sequence of tones and the type of response received will vary from repeater to repeater. One thing remains constant with all of them: the need to IDENTIFY YOURSELF. Something along the lines of "This is

ZL2BHF testing" is usually sufficient.

The uses of continuous tone coded squelch system (CTCSS) are many and varied. It may be used, for instance, by one station to contact a second without the second station being disturbed by other stations on the frequency. This may be useful when a station is waiting for a specific station to talk, but it is not the way most of us operate. A second use of CTCSS is as a warning that your station is being called, without necessarily locking out other stations. Manufacturers offering CTCSS facilities on their rigs often do so in a way that makes these facilities specific to their products; this may limit the usefulness of this feature. So, you should consult other amateurs before you use these facilities.

The National System

The National System is a series of dedicated linked high-quality repeaters on the 70 cm band. When a station accesses one of these repeaters, the signal is relayed to all other repeaters in the System and can be heard simultaneously up and down the country. For example, a station with a handheld in Wellington can talk via the System to a station in Auckland as if he or she were in the local region.

Guidelines for repeater use

Your local repeater will be monitored by more people than any simplex frequency, both by amateurs and non-amateurs. For many people it will be the only one they use—if it is occupied they will not be able to go to another one in the same way that another simplex channel can be used if one is busy. Therefore, extra courtesy and consideration for others is warranted.



Pay attention to good operating procedures—other listeners need to know what is going on. They will particularly want to know if a contact has been finished, so that they can use the repeater without worrying about getting in the way of someone else's conversation.

Keep in mind at all times why the repeater is there. In most cases, this will be voice communications. Non-voice modes on a voice repeater are not usual practice unless there are special circumstances—which usu-

ally means having discussed it previously with the repeater trustee. Digital modes (RTTY, AMTOR, Packet) are especially annoying to listen to and, of course, can't be deciphered without specialized equipment.

Voice on data repeaters (not digipeaters) is considered OK if that repeater is the only one you can use to make contact. It's probably best not to make the QSO any longer than absolutely necessary; you will no doubt reach this conclusion fairly rapidly yourself once the data starts coming in over the top of your transmissions!

One way use (ie, where one or more stations are not heard on the repeater output) is not advisable. A quick call to request another station to go to another frequency is OK, but it is inconsiderate and confusing to others to keep up a one-way contact for any length of time. Use simplex and a dummy load where possible for the alignment and preliminary testing of equipment. Avoid the use of repeater input frequencies for this purpose.

NZART co-ordinates the repeater system and will generally only accept proposals for repeaters that meet the guidelines commonly accepted in New Zealand. The FMTAG is responsible to NZART for the maintenance of repeater technical standards and recommended channel allocations. All repeater systems in New Zealand require a licence from the New Zealand Radio Frequency Service.

Bear in mind that all the comments above apply specifically to New Zealand repeaters and there may be marked differences in the operation of overseas repeaters and the procedures which you must use to work with them.

Amateur radio is "on display" on repeaters more than anywhere else. Try to create as good an impression as possible.

Phone patches

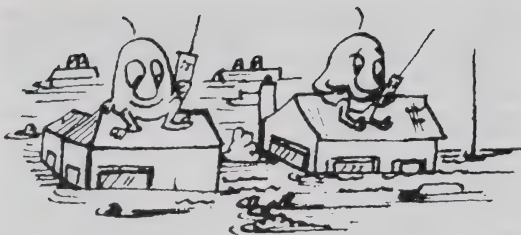
Radio regulations and licence requirements should be carefully observed when using a phone patch. Non-amateurs are not permitted to control an amateur station.

Normal traffic handled is "brief personal" messages, not business or commercial, and ONLY within New Zealand.

Phone patch equipment requires proper authorization to permit its connection to the public switched telephone network.

Packet radio

Messages sent via Packet radio should be in the spirit and tradition of amateur radio and meet the requirements of the Radio Regulations.



Care should be taken when distributing hardware, software or publications via Packet radio as it may be interpreted by others as advertising or infringing the copyright of material originated by others.

Priorities on repeaters

Repeaters allow mobile and portable stations away from the luxuries of mains power supplies and sophisticated antenna systems to increase their range. Another important purpose is to facilitate emergency communications.

Amateur Radio Emergency Corps (AREC) operators are distinguished by the use of E (emergency) call-signs, for instance ZL2EMA. If you hear these stations, give them priority.

Portable stations are those who are operating away from home, for example, a holidaymaker at a motor camp or a tramp in the ranges. They will identify themselves by using the word "portable" after the call-sign, eg: "This is ZL2QQ portable listening seven-one-seven-five." If you hear these stations, give them priority—they may not have access to a telephone and could be needing to relay an urgent message. Mobile stations are actually on the move at the time of transmission. They may quite often be heard on their way to and from work at peak hours, and will identify themselves by saying: "This is ZL4HG mobile seven-ten." There are all sorts of variations on this basic theme, such as "pedestrian mobile" (on foot), "train mobile", "maritime mobile" (all at sea?) and even "stationary mobile"—surely a contradiction in terms if ever there was one! Mobile stations may need to report breakdowns, traffic delays, traffic accidents or other urgent/important pieces of information, so should be given priority if heard.

Usually a mobile or portable station will not hog the repeater but will be listening for other stations who may need to use the frequency. With a little give and take there is plenty of room for all.

STSP Repeater

(Short Term Special Purpose repeater). A repeater designed for emergency use or during special events. An example is perhaps the need to provide communication for some local public event. It's important to note that the frequencies that

protected so that the repeaters can be moved about with little chance of interference with other repeaters.

The three second rule

Three seconds should be left between each over to allow other stations to access the repeater. If another station calls, let them in straight away—they may have an urgent message to transmit.

Long QSOs on repeaters

Lengthy conversations on repeaters need to be approached with care. It would not be very thoughtful to tie up a repeater for a long time during rush hour or early evening when other people are likely to be wanting to use it. Late at night is best. Where available, a 70 cm repeater that's not part of the National System might be a better choice if there is less traffic on that band and less likelihood of getting in someone else's way. Make sure that you leave three second gaps for other traffic, and it may also be a good idea to leave longer gaps, such as 10 seconds, every so often. Bear in mind, too, that even though you may make every effort to allow other stations to use the repeater if they need to, many people would rather wait until you have finished altogether. If possible, break the conversation up into two or three shorter contacts and leave the repeater free in between them.

More of a nuisance than long QSOs are long overs, especially when there are inadequate gaps between them. At busy times, keep the overs short so as to allow others, possibly with urgent messages, to access the repeater.

Checking the repeater input signal

Most radios these days have a setting called "repeater reverse", "monitor" or something similar which allows the operator to check the repeater input signal, ie, the frequency the other station is actually transmitting on. If you can hear this signal, it is a good indication that simplex contact with the station is possible.

Using simplex

Home station to home station contacts should be made on simplex where possible, thus leaving the

repeaters free to facilitate mobile and portable communication.

Simplex is like carrying on a conversation at the back of a room: although fewer people will hear it, it is still not private. The same standards of language and content apply regardless of frequency.

There are eight designated FM simplex channels on both the 2 m and 70 cm bands. A list of simplex channels is given in this Call Book.



Channel terminology

Channels or frequencies that are used on VHF/UHF are not normally named by all the numbers that make up the frequency. Instead, it is more common to use an abbreviated form of frequency for convenience. For example, the common simplex frequency of 146.525 MHz is referred to as six-five-two-five, where the rule is to omit the first two digits and the decimal point. The exception to this rule is where the frequency ends in zero, in which case the zero is omitted. For example, the frequency 147.000 MHz is referred to as seven-hundred, not seven-thousand.

Simplex and repeater signal reports

Many transceivers incorporate a signal strength meter (often called an S-meter). When you are listening to a transmission on simplex, the S-meter reading will give you an indication of how strong the station's signal is. With a repeater, the situation is quite different. The repeater signal strength remains constant, regardless of the transmitting station's signal strength. The degree of signal quieting varies instead—a strong input signal produces a clear, noise-free repeater output—described as "fully quieting" or "fully limiting"—while a weak signal will be noisy. If a signal falls below a certain level, it will not hold the repeater reliably but will pulse it intermittently or drop out altogether.

Please remember that other stations rely on signal reports to determine how well their setup is working—try to make your signal reports as accurate as you can.

Other modes

FM is not the only mode used on VHF and UHF, in fact almost any mode can, and often is, used on these bands. For example, single-band (SSB) is used for weak signal and long-distance work towards the bottom end of the 2 m band. By contrast, CW or Morse is used for very exotic work such as earth-moon-earth (E-M-E) communication. As on all bands, you choose the mode that best suits your application and your desire for experimentation.

You should be aware that many of the conventions we have outlined above for repeater operation may not necessarily apply to some of these exotic modes. As an extreme case, in E-M-E operation contacts are highly structured, based on very severe time constraints. The precise procedures for all the modes are beyond the scope of this article. They are covered in the recommended references.

The 6 m band

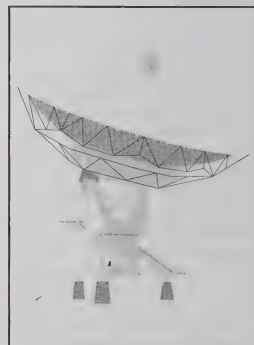
The 6 m band (50–54 MHz), lying between the highest high-frequency band and the 2 m VHF band, provides some exciting scope for experimentation into unusual modes of radio propagation. Communications over several thousands of kilometres is possible under favourable conditions, while at other times the band can seem dead.

This band lies close to the television Channel One, even overlapping part of this channel. For this reason a special MoC permit is required for operation in part of this band. You should consult a local Branch of NZART, FMTAG or known 6 m enthusiasts for details on the specific procedures before you begin operation.

Summary

Most of the special points relating to repeater use come under the category of commonsense considerations for others.

The Amateur's Code, first published in the *ARRL Handbook*, and reprinted in this Call Book, sums these up succinctly and we can do well to bear it in mind at all times.



LEARNING THE MORSE CODE

by
GARY BOLD
ZL1AN

Despite what the old-timers say, very few of us found learning Morse easy. To master Morse reception at 12 wpm requires an average of about 70 hours of study, but there are wide variations. About 10 per cent of learners do it in 40 hours or less, and another 10 per cent take more than 150 hours.

A lot depends on the way you learn. All authorities agree that the worst possible way to learn is by memorizing the code symbols from a printed chart. People who do this usually have little problem sending, but great trouble learning to receive. This is because the have to convert "visual" images into "sound" ones for every character they hear.

Learn to receive Morse first, and start by listening to it. The best way is to learn from a computer program which sends characters audibly, interrogates your state of knowledge, and adapts to your own rate of progress. Don't use programs which train you for the North American tests, which are different (simulated QSOs) from the New Zealand one (plain language). Don't use programs which exclusively send random groups. The skills involved in reading plain language text are different. Suitable software, for MS-DOS computers only, is available from me (ZL1AN). Send a disk and SASE to the *Call Book* address.

Several good audio cassette tape systems are also available. The best ones start by sounding a character audibly, then giving its associated letter by voice. Later tapes send words, then sentences, at increasing speeds.

There are usually several Morse practise nets running during the week on 80 m. If you have an HF receiver, tune around 3.550 to 3.600 MHz, starting at about 1900 hours. These sessions are easy to recognize because after each code transmission, lasting a few minutes, the control station reads back the text and often invites comments

from listeners. Speeds are varied, and texts are different each night. The discussion you'll hear are useful, since common problems are often discussed, and ways of overcoming them. If you can, spend some time just listening to the faster Morse sent between conversing Hams. You will pick out occasional letters, then whole words. It has been shown that this is very helpful as an adjunct to normal practise.

Several Branches also run practise sessions on VHF, or at the Clubrooms on a regular basis. Enquire at your local NZART Branch.

Learn the numbers at the same time as the letters—they are actually easier because they are longer—but many people put off learning them until the alphabet is mastered, and they seem harder because less time has been spent on them. I recommend learning the four common punctuation symbols (stop, comma, query and slash) and the "break" sign as well.

However you learn, listen only to Morse at a character rate of 12 wpm or more (I recommend 14 wpm), initially with long gaps between the characters. As you improve, the gap can be shortened until you are reading correct Morse. This helps progress considerably, since the mind does not have to adjust to a steadily increasing character speed, but has only to decrease recognition time.

The receiving test is a *written* one, so write the text down as you receive it. Many find it easier to print at first. Try to avoid *anticipating* the next character—if you get it wrong it will throw you off.

How long, and how frequently, should you practise? Half an hour per day is fine. Some people find that before breakfast, when the mind is fresh, is better than in the evening. Others find that two 20 minute sessions, morning and evening, work well for them. Longer than this, staleness sets in and little further

progress is made. If you do this, in three to six months you'll almost certainly be up to 12 wpm. Some people get additional practice by listening to code tapes while driving to work, sweeping the basement, or doing the dishes.

This is where tooth-gritting dedication comes in. You have to practise *regularly*, and make it a part of your daily routine. If you stop for a month, you'll slip back. If you use tapes or a computer you can periodically compute your error rate at a given speed. Invariably those who do this find that they are improving—even though they feel that they are standing still.

Only after you have the correct *sound* and *rhythm* of the characters embedded in the mind should you commence sending practise. Good new Morse keys are hard to come by, but there are still some used ones about, and you may find that a local will loan or sell you one. Most New Zealanders find the rounded European knob easier to manipulate than the flat or slightly dished American one. Some have replaced flat knobs with pot lids from the hardware store.

Secure the key firmly near the edge of a table. I recommend opening the key contacts to give a throw of about 1 mm at the knob, and adjusting the tension until the key closes with the weight of 2 D-cells on top of the knob (although some experts dispute these settings). Sit so that your sending arm is at right angles to the body, elbow level with the wrist. Keep the elbows stationary. Place two fingers atop the knob, thumb at the side or underneath. Form both dots and dashes by *pumping the wrist* and *not* by pressing with the fingers. "Finger sending" tenses the whole arm, guarantees a later "choppy" style and is rapidly tiring.

To get the relative lengths of dits and dahs correct, practise by sending this continuous stream:

di di di di dah dah di di di di dah dah ...

Tap your foot regularly on the accented symbols. The four dit and two dah segments should take exactly the same time (although dash and dot *sounds* have a 3:1 ratio, if you include the dot-space with each one, the ratio becomes 2:1). Do not try to *send fast!* Speed will come when you get the rhythm right. Twelve words per minute rapidly becomes an easy sending speed for almost everyone.

If you can, practise sending along with a tape of computer, from a known text, and try to send in synchronism with the code you hear. (This is surprisingly difficult, even many regular operators have trouble!) This helps getting the correct space lengths between characters and words. By far the greatest fault you'll hear on the air is characters and words run together! This happens when operators try to send faster than their digital dexterity allows.

Once you pass the test, try to have at least a few contacts on the air. You may find that you enjoy it. You'll rapidly begin to recognize the different Morse sent by straight keys, bugs and electronic keyers, and find that the regulars on 80 m become instantly recognizable by their "fists", which are as distinctive as voices. Many have found that in a surprisingly short time their reading ability has outstripped their maximum sending speed. These days may then start using an electronic keyer which, after some practice, enables them to send at least 50 per cent faster than they can on a straight key, with much less effort.

You'll find that DX contacts with foreign stations are easy in CW, since all know enough basic English to communicate, and many in poorer countries operate *only* on CW.

Good luck!

OPERATING INFORMATION

The Amateur is Friendly ...

Slow and patient sending when requested, friendly advice and counsel to the beginner, kindly assistance, co-operation and consideration of the interests of others; these are the marks of the amateur spirit.

The Amateur's Code

If you've passed the plain language Morse test without doing much, or any, listening on the air (readily possible) listening to real CW conversations is initially a perplexing experience. It takes some time to get used to the conventions, the Q codes, the abbreviations, the HF noise, and the interference.

After a while, however, you'll realize that the first few overs are usually very stylized, especially between stations who have not made contact before. The "standard information" (name, QTH, signal report, maybe power, rig, antenna) is always exchanged in a similar manner, and critical bits are always repeated. Only after a couple of overs does the conversation become less formal—but even then most of us follow patterns.

How should you go about it? Here some suggestions.

For the first QSO, it's a good idea to *arrange* a contact with some local who will send good, slow Morse, and have a strong enough signal to overcome the noise—which is quite unsettling if you have been used to noise-free code sent in practice sessions. And when you make contact, practise by sending the standard information just the way you would to an unknown operator.

Assume that I have called you. Here is how the conversation might go. I have included the abbreviations you'll hear frequently, and which you'll need to become familiar with.

ZL1XYZ ZL1XYZ DE ZL1AN ZL1AN K

ZL1AN DE ZL1XYZ—GE OM ES TNX FER CALL—RST 589 589—NAME HR FRED FRED ES QTH AUCKLAND AUCKLAND HW? ZL1AN DE ZL1XYZ K

ZL1XYZ DE ZL1AN—GE FRED—RST 579 579—NAME HR GARY GARY ES QTH AUCKLAND AUCKLAND HW? ZL1XYZ DE ZL1AN K

ZL1AN DE ZL1XYZ—R—FB GARY—WX HR TODAY FINE ES TEMP 23—RG HR TS440 RUNNING 100W—ANT IS DIPOLE AT 10 METRES—HW? ZL1AN DE ZL1XYZ K

ZL1XYZ DE ZL1AN—R—FB FRED—HR WX COLD BUT NO RAIN—RIG HR TS520S—RUNS 80W—ANT IS ONLY END FED RANDOM WIRE WITH TUNER HIBAND GUD TONITE—NO QRN OR QRM—HW? ZL1XYZ DE ZL1AN K

ZL1AN DE ZL1XYZ—R FB GARY—TNX FER QSO—NW CUL ES 73 GARY GN OM—ZL1AN DE ZL1XYZ SK

dit dit
dit dit

Now at 12wpm those exchanges will have taken just over 10 minutes. That's plenty long enough for a start, so you can sign off gracefully. I guarantee you'll get a real buzz out of doing that!

Points to note

• Overs start and finish with the call-sign exchange, terminates with "K". Some operators insert "AR" before the last one, and finish with "KN"—which means "I don't want anybody to break in". But most of us enjoy having others enter our conversations.

• We used the most common standard abbreviations GE, ON, ES, TNX, R FER, HR, HW, FB, WX, RIG, ANT, HI, W, GUD, NW, CUL, GN. "HI" is often sent as "HEE". If some of these are strange, look them up. They rapidly become intuitive, and really save time.

• We used to most common Q-code and procedural signs QTH, QRM, QRN, QSO, RST.

• We exchanged information in a very stylized manner. Between friends or inveterate ragchewers conversations will be less formal, especially after the first few overs—but you won't go wrong doing it just this way, and many DX conversations sound just like this.

• We each ended with a pleasant "dit dit" to say goodbye—not necessary, but you'll often hear it. (Sometimes after an interesting conversation several other "dit dits" will sound, from phan-

tom listeners who have been following the conversation with interest.

Almost everybody initially finds it difficult to "send from the head" instead of reading from a text, as you will have been doing in practice. Therefore, *write down the first few overs you'll send—at least in skeleton form*, so you can send from the hard copy. You'll rapidly find that this becomes unnecessary.

You'll also probably find it more natural to initially write *everything received down*, as you will have been doing. With experience you'll begin to "read in the head" and note down only call-signs, times, reports, names and items to comment on. Experienced operators write up the log as they go, but at first it's much easier to scribble details down on a scratch pad and complete the log carefully afterwards.

If the conversation continues longer, what do you say? CW operators talk about almost everything. Make two more lists: one of short phrases about your job, your age, your family, your other hobbies, other modes you operate. The other, questions you can ask: what is *your* job? Do you operate Packet? How long have you been a ham? This may seem very stilted, but it will get you going. After a while these memory joggers won't be necessary either.

You will often hear stations calling "CQ"—more common on CW than SSB these days. At some stage you will want to send, or answer one yourself. The "3x3" format is best, that is:

CQ CQ CQ DE ZL1AN ZL1AN repeated three times, terminated with "K". Don't be one of those irritating people who send "CQ CQ CQ ...". 25 times before giving a call-sign. Listeners get impatient and wander off. Short calls, repeated after a few seconds are best. If you call CQ, tune around a few kilohertz listening for answers, somebody may have forgetfully left his RIT engaged, and be replying outside your pass-band.

When 40m and above are open,

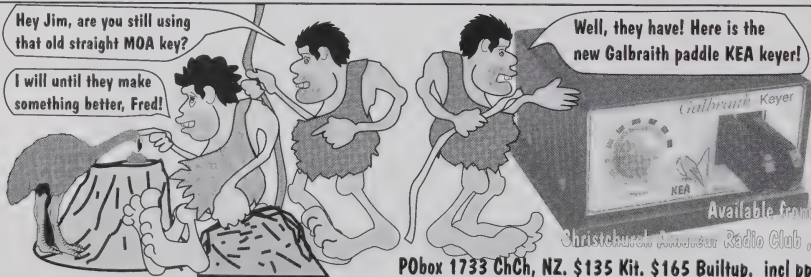
DX contacts are easy since ZL stations are held to be quite rare and everybody is happy to talk to us. Often you'll hear: MY QSL SURE PS QSL VIA BUREAU which means "I will certainly send you my QSL card, please send yours via the QSL bureau". Information regarding QSL Bureau procedure will be found elsewhere in the *Call Book*, and somebody at the local Branch will explain what to do.

If you answer a CQ the accepted polite thing to do is to send back at a speed no greater than that of the send station—unless you know that the other operator is capable of higher speeds. If somebody answers you at speeds higher than you can comfortably receive, send back "PSE QRS 15"—or whatever speed you can copy. If the other station won't do this, just sign off gracefully and talk to somebody else. There are plenty of DX stations who send around this speed, and many, CQing faster, will gladly slow down to talk to you.

You will also hear conversations at higher speeds in the 20–30wpm range. These operators generally use electronic keyers and send very good Morse. Listen to such contacts frequently and you'll find your reading speed slowly improves. Once you have the experience to operate in this range, you'll find contacts very enjoyable as a surprising amount of information can be passed at these speeds, and the Morse is better.

At higher speeds than these it becomes difficult for ordinary mortals to send accurately with any sort of keyer. You'll hear stations conversing at 35–45wpm using keyboards for sending, although they will be reading in their heads. Once you can copy at these speeds, the Morse, being perfect, is a delight to copy—it just "decodes itself". Conversations at these speeds are typically much more in "plain language" with few abbreviations and included punctuation.

Come down and join the regulars on the bottom end of 80 metres! We'll be glad to talk to you!



P0box 1733 ChCh, NZ. \$135 Kit. \$165 Buildup. incl pp

ABBREVIATIONS FOR CW WORK

ABT	About	OB	Old boy
AGN	Again	OC	Old chap
ANT	Antenna	OM	Old man
AR K	End of transmission	OP; OPR	Operator
AR VA	Final end of transmission	OT	Old timer; Old top
AS	Wait		
		PSE;	Please
BCI	Broadcast interference	PWR	Power
BCL	Broadcast listener		
BK	Break; I wish to break-in (interrupt) a transmission in progress	R	Received as transmitted; are (sometimes also used as a decimal point, e.g. 1R5)
BN	All between; been	RCVR; RX	Receiver
BUG	Semi-automatic key	REF	Refer to; Referring to; Reference
B4	Before	RFI	Radio frequency interference
		RIG	Station equipment
C	Yes	RPRT, REPT	Report
CL	I am closing my station; call	RPT	Repeat; I repeat
CPI, CPY	Copy	RTT; RTTY	Radioteletype
CQ	Calling any station	RX; RCVR	Receiver
CUAGN	See you again		
CUD	Could	SA	Say
CUL	See you later	SASE	Self-addressed, stamped envelope
CW	Continuous wave, i.e. radio telegraphy	SED	Said
		SIG	Signal
DE	From	SKED	Schedule
DR	Dear	SRI	Sorry
DX	Distance, foreign countries	SSB	Single sideband
		SUM	Some
ER	Here	T	Zero (0)
ES	And; &	THO	Though
		THRU; THRO	Through
FB	Fine business, excellent	TMW	Tomorrow
FER	For	TNX; TKS	Thanks
FM	Frequency modulation; From	TT	That
		TU; TKU	Thank you
		TVI	Television interference
		TX	Transmitter
		TXT	Text
GA	Go ahead, continue sending; good afternoon		
GB	Goodbye	U	You
GE	Good evening	UR	Your; You are (sometimes YR)
GG	Going; grounded grid	URS	Yours (sometimes YRS)
GM	Good morning		
GN	Good night	VFO	Variable frequency oscillator
GND	Ground	VY	Very
GUD	Good		
		WID	With
HI	Laughter; High	WKD; WKG	Worked; Working
HPE	Hope	WL	Well; Will
HR	Here; Hear; Hour	WUD	Would
HV; HVE	Have	WX	Weather
HW	How		
		XCVR	Transceiver
K	Go ahead	XMTR; TX	Transmitter
KN	specific station go ahead	XTAL	Crystal
		XYL; YF	Wife
MA:MILS	Milliamperes		
MNI	Many	YL	Young lady
MSG	Message		
N	No; North	73	Best Regards
NCS	Net control station	88	Love and kisses
ND	Nothing doing		
NIL	Nothing; I have nothing for you		
NR	Number		
NW	Now		

THE Q-CODE

QRG	Will you tell me my exact frequency (or that of ...)? Your exact frequency (or that of ...) is ...kHz.	QSB	Are my signals fading? Your signals are fading.
QRH	Does my frequency vary? Your frequency varies.	QSD	Are my signals mutilated? Your signals are mutilated.
QRI	How is the tone of my transmission? The tone of your transmission is ... (1. Good; 2. Variable; 3. Bad)	QSK	Can you hear me between your signals and if so can I break in on your transmission? I can hear you between my signals; break in on my transmission.
QRK	What is the intelligibility of my signals (or those of ...)? The intelligibility of your signals (or those of ...) is ... (1. Bad; 2. Poor; 3. Fair; 4. Good; 5. Excellent)	QSL	Can you acknowledge receipt? I am acknowledging receipt.
QRL	Are you busy? I am busy (or I am busy with ...) Please do not interfere.	QSM	Shall I repeat the last message I sent you, or some previous message? Repeat the last message which you sent me [or message(s) number(s) ...]
QRM	Is my transmission being interfered with? Your transmission is being interfered with ... (1. Nil; 2. Slightly; 3. Moderately; 4. Severely; 5. Extremely)	QSN	Did you hear me (or ...) on ...kHz? I did hear you (or ...) on ...kHz.
QRN	Are you troubled by static? I am troubled by static ... (1-5 as under QRM)	QSO	Can you communicate with ... direct or by relay? I can communicate with ... direct (or by relay through ...)
QRO	Shall I increase power? Increase power.	QSP	Will you relay to ...? I will relay to ...
QRP	Shall I decrease power? Decrease power.	QST	General call preceding a message addressed to all amateurs and ARRL members.
QRQ	Shall I send faster? Send faster (... wpm).	QSU	Shall I send or reply on this frequency (or ...kHz)? Send or reply on this frequency (or ...kHz).
QRS	Shall I send more slowly? Send more slowly (...wpm)	QSV	Shall I send a series of Vs on this frequency (or on ...kHz)? Send a series of Vs on this frequency (or on ...kHz)
QRT	Shall I stop sending? Stop sending.	QSW	Will you send on this frequency (or on ...kHz)? I am going to send on this frequency (or on ...kHz)
QRU	Have you anything for me? I have nothing for you.	QSX	Will you listen to ... on ...kHz? I am listening to ... on ...kHz.
QRV	Are you ready? I am ready.	QSY	Shall I change to transmission on another frequency? Change to transmission on another frequency (or on ...kHz).
QRW	Shall I inform ... that you are calling him on ...kHz? Please inform ... that I am calling on ...kHz.	QSZ	Shall I send each word or group more than once? Send each word or group twice (or ... times).
QRX	When will you call me again? I will call you again at ... hours (on ...kHz).	QTC	How many messages have you to send? I have ... messages for you (or for ...)
QRZ	Who is calling me? You are being called by ... (on ...kHz)	QTH	What is your location? My location is ... (QTHR—Location as per Call Book)
QSA	What is the strength of my signals (or those of ...)? The strength of your signals (or those of ...) is ... (1. Scarcely perceptible; 2. Weak; 3. Fairly good; 4. Good; 5. Very good)	QTR	What is the correct time? The time is ...

Morse Alphabet

A	• —	N	• •
B	• • •	O	— — —
C	• — • •	P	• — • •
D	• • •	Q	— • — —
E	•	R	• • •
F	• • • •	S	• • •
G	— • •	T	—
H	• • • •	U	• —
I	• •	V	• • — —
J	• — — —	W	— — —
K	— • —	X	• — • —
L	• — • •	Y	• • — —
M	— —	Z	— • • •

Numerals

1	• — — — —	6	— • • • •
2	• • — — —	7	— • • • •
3	• • • — —	8	— • — • •
4	• • • • —	9	— — — — •
5	• • • • •	0	— — — — —

Procedure Signals

Full stop	(.)	• • — • — • —
Comma	(,)	— — • • — —
Colon	(:)	— — • • • •
Question mark/Repeat	(?)	• • — • — •
Apostrophe	(')	• — — — — •
Hyphen/dash	(-)	— • • • • —
Fraction bar	(/)	— • • • • •
Parenthesis (left hand)	((	— • — • •
Parenthesis (right hand)	))	— • — • — •
Quotation marks	(")	• — • • • •
Error		• • • • • • •

Spacing and length of signal

1. A dash is equal to three dots.
2. The space between the signals which form the same letter is equal to one dot.
3. The space between two letters is equal to three dots.
4. The space between two words is equal to seven dots.

WORLD TIME CONVERSION CHART IN HOURS

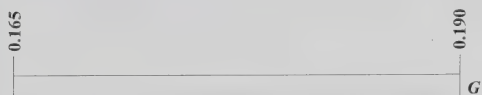
Azores, Cape Verde	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11pm
Fernando de Noronha	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10pm
Greenland, Rio de Janiero, Brazil	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9pm
Atlantic Standard Time, Chile, Nova Scotia	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8pm
Eastern Standard Time, Montreal, New York, Peru	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7pm
Central Standard Time, Chicago, Costa Rica	6pm	7pm	8pm	9pm	10pm	Mid Night	1am	2am	3am	4am	5am	6am	7pm
Mountain Standard Time, Calgary, Denver, Phoenix	5pm	6pm	7pm	8pm	9pm	10pm	Mid Night	1am	2am	3am	4am	5am	6pm
Pacific Standard Time, Los Angeles, Seattle, Juneau	4pm	5pm	6pm	7pm	8pm	9pm	10pm	Mid Night	1am	2am	3am	4am	5pm
Eastern Alaska, Dawson	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	Mid Night	1am	2am	3am	4pm
Hawaiian Islands	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	Mid Night	1am	2am	3pm
Nome, Alaska, Samoa, Midway Islands	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	Mid Night	1am	2pm
International Date Line, Fiji Islands, New Zealand Standard Time	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	Mid Night	1pm
New Caledonia	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	Mid Night
Eastern Australia, Melbourne, Sydney	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm
Central Australia, Tokyo Japan	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm
Philippine Islands, Perth Australia	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm
Laos, Sumatra, Thailand	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm
Calcutta, Novosibirsk Russia, Bangladesh	6am	7am	8am	9am	10am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm
Central Russia, Pakistan	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm
Mauritius, Oman, Reunion Island	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm
Arabia, Iraq, Eastern Europe, Moscow, Ethiopia, Malagasy	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm
Athens, Cape Town, Cairo	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm
Central Europe, Berlin, Geneva, Stockholm, Vienna	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Mid Night	1am
Greenwich Meridian Time, London England	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200

OPERATING INFORMATION

AMATEUR RADIO BAND USAGE—1994

1800 metres

MOC permit required. Power limited to 5 W EIRP. See Break-In December 1990 for details.



160 metres

Avoid 1.800 and 1.860 MHz. 1.850-1.950 MHz shared with navigation.



80 metres



40 metres

Amateur satellite service permitted 7.0-7.1 MHz.



30 metres

Avoid 10.130 MHz +/- 3kHz



20 metres

Amateur satellite service permitted 14.00-14.25 MHz.

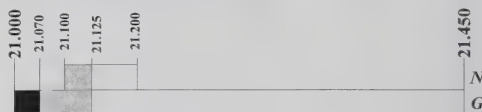


17 metres



15 metres

Amateur satellite service permitted in whole band



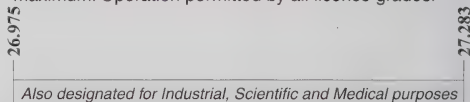
12 metres

Amateur satellite service permitted in whole band.



11 metres

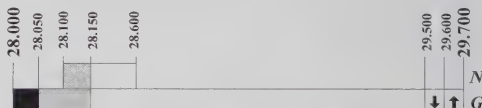
Telemetry or telecontrol only. 5W mean power maximum. Operation permitted by all licence grades.



Also designated for Industrial, Scientific and Medical purposes

10 metres

Amateur satellite service permitted in whole band



Note: This chart is taken from IARU Region III bandplans and should be taken as an operating guide. Always read this chart in conjunction with the table "Terms, Conditions and Restrictions Applying to Amateur Radio Apparatus Licence" from MOC.



Repeater input band segment



Repeater output band segment



CW or modes less than 1kHz bandwidth



All modes with bandwidth less than 6kHz



Data/packet, less than 6kHz bandwidth

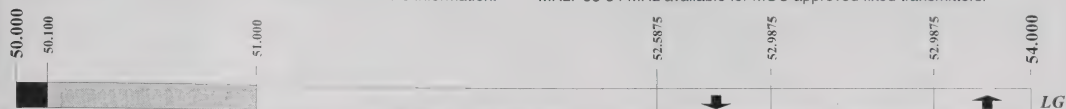
G,N General/Novice class licence conditions

Prepared by FMTAG, NZART June 1997

6 metres

Special conditions apply to the use of this band. Operation may require an MOC permit. Refer to "Terms, Conditions..." for more information.

SSB/CW international calling 50.11, Oceania 52.05, FM calling 52.525 MHz. 53-54 MHz available for MOC approved fixed transmitters.



2 metres

Amateur satellite service permitted in the range 144-146 MHz. Oceania SSB calling 144.1, ZL calling 144.2, FM calling 146.475 MHz. Primary

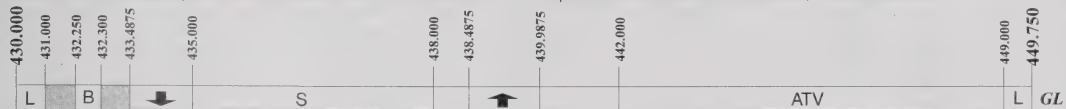
packet/digipeater 144.65 MHz, other frequencies available. Below 147 MHz, repeater offset -600kHz, otherwise +600kHz offset.



70 cm

Amateur satellite service permitted in the range 435-438 MHz. SSB calling 432.2, FM calling 432.5 MHz, beacons 432.25-432.30 MHz.

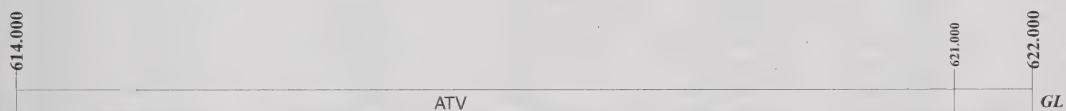
Primary packet/digipeater 432.65 MHz, other frequencies available. Repeater offsets -5MHz in most cases, +5MHz otherwise.



50 cm

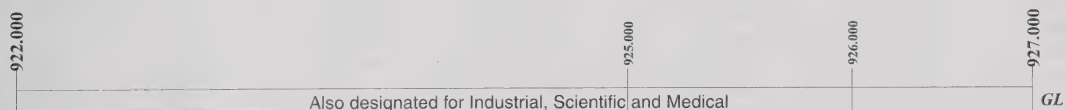
SSB calling 621.2, FM calling 621.5, packet 621.65 MHz.

ATV vision carrier 615.25 MHz ITU(R) system B.



32 cm

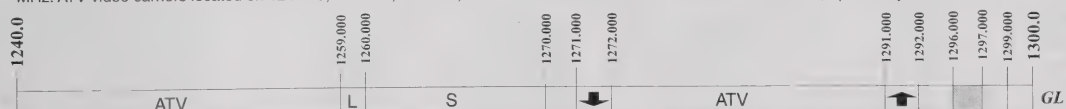
MOC permit required for operation. Power 25 W mean ERP. SSB calling 925.2, FM calling 925.5 MHz. Beacons 925.25-925.30 MHz.



23 cm

SSB calling 1296.2, FM calling 1296.5 MHz. Beacons 1296.25-1296.30 MHz. ATV video carriers located on 1244.25, 1251.25, 1277.25, and

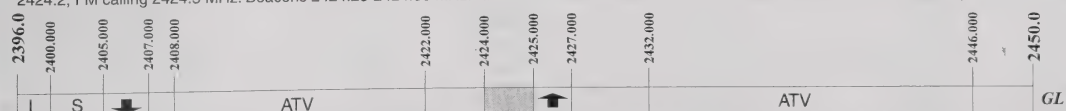
1284.25 MHz, ITU(R) system B. Repeaters +20 MHz offset. Amateur satellite service in band 1260-1270 MHz, uplink only.



12 cm

Standard 1 MHz narrow band segment 2424-2425 MHz. SSB calling 2424.2, FM calling 2424.5 MHz. Beacons 2424.25-2424.30 MHz. ATV in

segment 2408-2422 and 2432-2446 MHz, ITU(R) system B. Repeaters +20 MHz offset. Amateur satellite service in 2400-2450 MHz, downlink.



- Repeater input segment
 - Repeater output segment
 - Modes less than 1kHz bandwidth
 - Modes less than 6kHz (or narrowband segment, above 1GHz)
- ATV, S, B, P, FM - ATV, Satellite, beacons, packet or FM simplex

This chart is to be used as a guide. Consult "Terms, Conditions..." from MOC for more information. Narrow band segment bandplan for microwave bands detailed elsewhere.

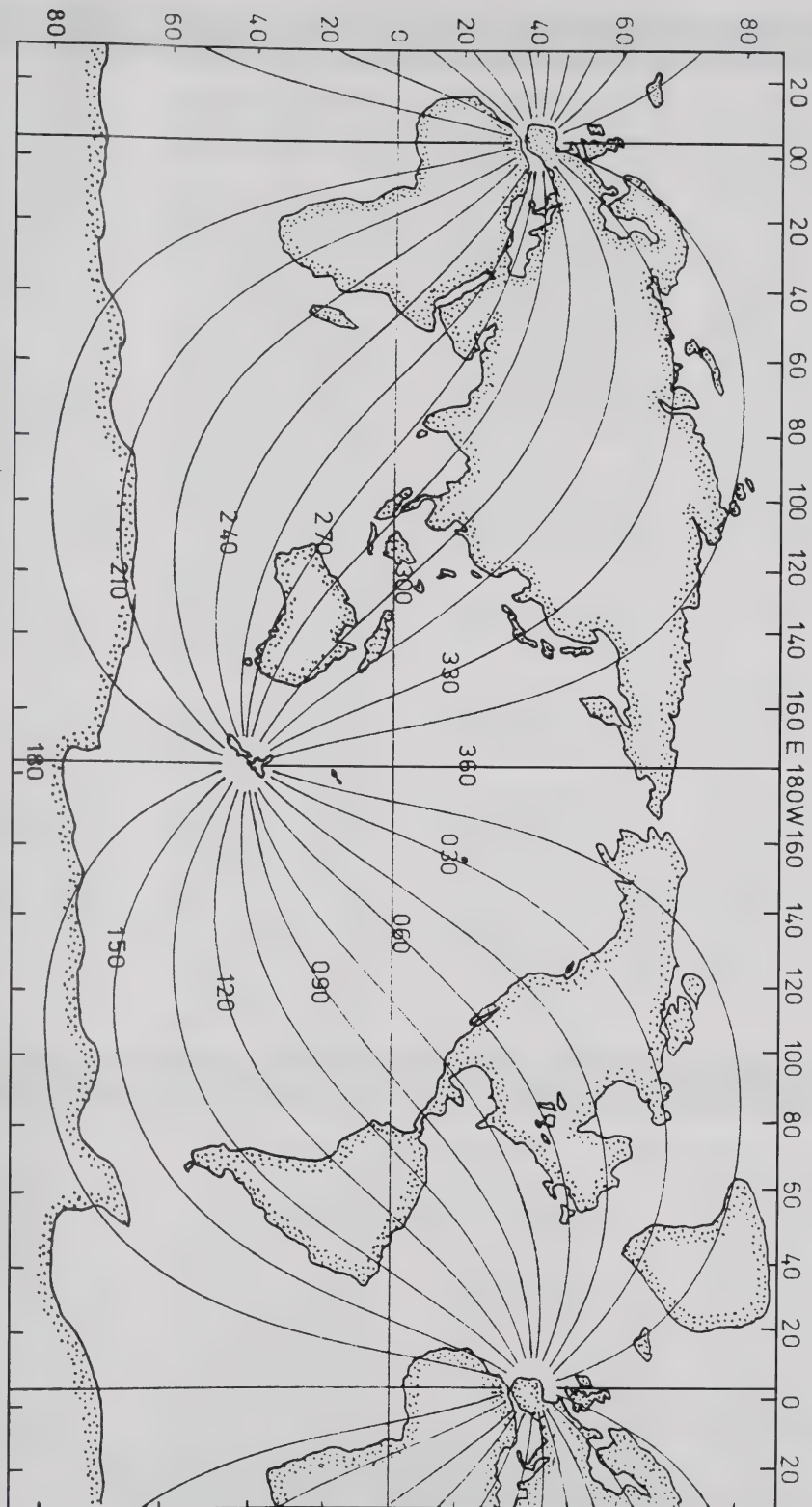
Great Circle DX Bearings Based on Wellington

prepared by RON MURPHY ZL1AMM

Listed below are the approximate short path bearings based on the great circle map centred on Wellington. These listings, based on true north, will point your directional antenna in the appropriate direction before final adjustment depending on the sharpness to which the antenna was installed. The long path bearings are about 180 degrees in the opposite direction.

A good inexpensive Azimuth (great circle on Wellington) map, number NZMS 47, is obtainable from metropolitan offices of the Department of Survey and Land Information. Available from overseas are several computer-derived DX beam headings.

A2	210	FH	230	KG4	90	S7	240	VU7A	285	3D2	N
A3	20	FK	340	KH1	15	S9	205	VU7L	275	3DA0	220
A4	270	FM	95	KH2	320	SM, SK, SL	330			3V	250
A5	295	FO	60	KH3	20	SP	310	W, K, N, A	60	3W, XV	295
A6	275	FP	65	KH4	N	ST, ST0	250			3X	155
A7	275	FR	235	KH5, KH5K	30	SU	260	XE	70	3Y, Bouvet	185
A9	275	FS	100	KH6	25	SV, J4	270	XF4	70	3Y, Peter I	155
A, K, N, W	60	FT5W	220	KH7	N			XT	180		
AP	280	FT5X	225	KH8	20	T2	N	XU	295	4E7, DU	310
		FT5Y	180	KH9	350	T30	N	XV, 3W	295	4J	330
BS7H, BS0H	290	FT5Z	230	KH0	320	T31	20	XW	295	4K2/FJL	N
BV9P	310	FW	N	KL	15	T32	30	XX	305	4K5-9	290
BV	315	FY	115	KP1	90	T33	N	XY, XZ	290	4L	290
BY, BA, BD, BG	315			KP2	90	T5	245			4K0	330
		G, GX	345	KP4	90	T7	280	Y2-9	320	4S	280
C2	N	GD, GT	5	KP5	90	T9	285	YA	290	4U/ITU	300
C3	280	GI, GN	15	KX	350	TA	280	YB, YC, YD	300	4U/UN	65
C5	155	GJ, GH	345			TF	15	YI	270	4W	255
C6	95	GM, GS	N	LA	335	TG	90	YJ	330	4X, 4Z	265
C9	230	GU, GP	345	LU	135	TI	90	YK	270	5A	260
CE	130	GW, GC	350	LX	325	TI9	90	YL	320	5B	270
CE0	110, 120			LY	320	TJ	205	YN	90	5H	230
CO	80	H4	335	LZ	285	TK	230	YO	285	5N	195
CN	220	HA	300			TL	205	YS	90	5R	225
CP	125	HB	300	M, MX	345	TN	210	YU1, 6, 7, 8	285	5T	160
CT	130	HB0	300	MI	15	TR	200	YV	100	5U	175
CT3	140	HC	100	MM	N	TT	220	YV0	100	5V	175
CU2, CT2	90	HC8	90	MW	350	TU	160			5W	20
CX	140	HH	90			TY	190	ZA	275	5X	235
CY9, 0	65	HI	90	N, K, W, A	60	TZ	160	ZB	180	5Z	235
		HK	100	OA	110	UA-UI, R	320	ZC	270		
D2, 3	210	HK0	90	OD	275	UJ-UM	290	ZD7	180	6O	245
D4	150	HL	325	OE	305	UN-UQ	290	ZD8	170	6W	150
D6	230	HP	90	OH, OJ	330	UR-UZ, EM-EO	300	ZD9	170	6Y	90
DA to DR	320	HR	90	OK, OL, OM	310			Z2	220		
DU, 4E7	310	HS, E2	285	ON	330	V2	95	Z3	285	7O	255/275
		HV	280	OX	20	V3	85	ZF	90	7P	220
E2, HS	285	HZ, 7Z	260	OY	N	V4	95	ZK1N	50	7Q	230
E3	245			OZ	330	V5	200	ZK1S	60	7X	240
EA	260	I	280			V6, 7	320	ZK2	N	7Z, HZ	260
EA6	250	IS	270	P2	310	V85	290	ZK3	30	8P	90
EA8	140			P4	95	VE	50	ZL7	110	8Q	275
EA9	180	J2	245	P5	325	VK	280	ZL8	30	8R	110
EI	10	J3	95	PA	330	VK9L	290	ZL9	190		
EK	290	J4, SV	270	PJ	95	VK9N	340	ZP	125	9A	285
EL	180	J5	155	PJ7	90	VK9X	275	ZS	210	9G	185
EM-EO, UR-UZ	300	J6	95	PY	140	VK9Y	270	ZS8	210	9H	250
EP	280	J7	95	PY0	125, 145	VK9Z	320	ZS9	200	9I, 9J	220
ER	285	J8	95	PZ	100	VK0H	220	ZS0	200	9K	270
ES	320	JA	335			VK0M	210			9L	165
ET, 9F	245	JD	335	RA	see UA	VP2	95	1A0	280	9M2, 4	285
EU, EV, EW	310	JT	325	R1A	180	VP5	95	1S	285	9M6, 8	285
EX	290	JW	5	R1F	N	VP8	150, 180	3A	295	9N	295
EY	290	JX	5	R1M	330	VP9	80	3B6	235	9Q	230
EZ	290	JY	265			VQ9	265	3B7	235	9U	230
				S0	140	VR2, VS6	305	3B8	235	9V	285
F	310			S2	290	VR6	90	3B9	230	9X	230
FC	230	K, N, A, W	60	S5	285	VS6, VR2	305	3C	205	9Y	100
FG	100	KC6	320			VU	270	3C0	205		
										Antarctica	180



GREAT CIRCLE BEARINGS FROM WELLINGTON.

Low power transmitting on the HF bands, better known as QRP, has been gaining in popularity over the past decade. There is now a great number of hams who use 5 W or less on CW and less than 10 W on SSB.

To see that such an interest in growing it is only necessary to look at the memberships of some of the QRP clubs around the world. The G-QRP Club of Great Britain has 5000-6000 members worldwide. The CW Operators QRP Club in Australia has recently topped the 500 mark, also with membership spread around the world.

In New Zealand there is the ACORNZ (Amateur Communications Output Reduced New Zealand) group which at this time has no formal organization and is just a group of like-minded individuals. My list of those QRPers who have responded to the Net (Monday, 8pm local time, 3.605 MHz) how numbers more than 30, but there are many more who have not been in contact.

To meet this growing interest there are innumerable rigs available for QRP work, mainly as kits. Ham radio magazines now cater for this increase with many articles on low powered equipment.

So why work with such tiny outputs of power when a QRO (high power) 100 W rig can be picked up for a couple of hundred dollars or so second hand?

It is the challenge of getting a tiny signal half way around the world; of building your own rig; of digging out another tiny signal from the ever growing volume of electronic and natural hash bouncing around the airwaves.

Many New Zealand QRP opera-

tors have worked hams in England using no more than 1.5 W on the popular 80 m or 40 m Chelmsford transceivers. Designed by Mike Kerr ZL2BCW (*Break-In* December 1983) and offered as a kit by Wellington Branch 50. It is estimated that one in ten active hams have bought and built a Chelmsford. Mike says his first effort on 80 m, with a Chelmsford, was to reach Tonga, but on 40 m results have been much more spectacular.

The Heathkit HW series were popular kits and many were built around the world. The Ten-Tec Argonaut series rigs are also used extensively. These are just a couple of examples.

These are no longer produced, but more recently a DSB (double side-band) 80 m novice rig was put out by the Australian Jaycar organization and many were imported into New Zealand.

Modifications to extend the frequency range, designed by Riki Allison ZL2BRU and Joe Ward ZL2AX, have appeared in the QRP column in *Break-In*.

Most ham magazines carry articles on QRP rigs and several on QRP activities. Also there are quite a number of books available devoted to the art.

The real beauty of QRP is that it is mainly cheap to construct the equipment and because of the small size it can be used anywhere—from home, the car, out in the bush and tramping. It can even be used in the living room while the XYL is watching television. Using a Chelmsford plus earphones (cans) and a keyer, no signals, squeaks, whistles or key clicks etc can be heard by anybody except the operator.

Close attention must be made to

the antenna, to minimize losses by attenuation in the system. So the old saying "spend more on the antenna than the rig" really applies in this case.

Antennas used by QRP folk are as diverse as the locations they work from. End-wires, inverted Vees, flat top dipoles, loops, beams, all are used with great success and satisfaction to the operators.

It all depends on your location and space available. A piece of wire 10-20 m long will get a signal out, and an inverted V needs just one centre support. Get hold of an antenna anthology and do some research, it's all part of the fun.

My own set-up is two inverted Vs fed with the same 50 Ω coax for 80 m and 20 m, fed through an ATU and SWR/power meter (Ten-Tec kit-set) using either the Chelmsford (80 m) or Heathkit HW7 (20 m).

VK-land has been worked on both bands in the past month (April 1997) but since we are at the bottom of the solar cycle 20 m long range work is hardly possible with such low power. The simple keyer I use was also from a Ten-Tec kitset.

The whole system probably cost less than \$300. Junk sales provided some bits, kit sets some more and *Break-In* ham advertising the rest.

If you need circuits and ideas the following books are a good source of information. Available from NZART is Doug DeMaw W1FB's *QRP Notebook* and the G-QRP Club's *Circuit Handbook* both full of information on low power equipment. There are others, if you can locate them: *Joy of QRP* by Adrian Weiss K8EEG, *QRP Classics* and *Low Band DXing* by John Devoldere ON4UN. The latter is not strictly for QRP but has a lot of information on DX working,

antennas and propagation. Have a look at the 80 m beam!

Two clubs to join are the G-QRP Club of Great Britain. Send your subscription of \$17.00 to M. J. Sheffield ZL1ABS, 176 Albany Highway, Albany, Auckland 1331. The second is the CW QRP Operator's Club which also caters for SSB fans. Subscription is \$14.00, about NZ\$16, send to Kevin Zietz VK5AKZ, Treasurer, CW Ops QRP Club, 41 Tobruk Avenue, St Mary's SA 5042, Australia.

Each organization publishes a magazine four times a year. *SPRAT* from Britain and *Lo-Key* from Australia. Either one, or both, are good value for money.

And of course there is the World Wide Web sites for QRP information. Try G3VCC at www.gqrpcub.demon.co.uk and www.geocities.com/CapeCanaveral/5179 for starters.

For components and kits try DF Components, PO Box 82272, Highland Park, Auckland; or (for Ten-Tec kits) Ham Radio Direct, 5-9 Duke Street, Putaruru.

This article has been an attempt to provide some information on the world of QRP and the fun that can be had working with home-made equipment.

Dive in and give it a go, you won't be disappointed. But listen first on 3.530, 7.030, 10.106, 14.060, 21.060, 28.060 for CW QRP and on 3.690, 7.090, 14.285, 21.285, 28.360 for SSB. Then try a CQ call.

And, Oh yes, read the QRP page in *Break-In*!

Catch you on the bands.

73 de Bill ZL2BIL

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**73, A. G. (Tony) Briggs
ZL2UBN**

Communications across town or in the local area may be by *ground waves*, but for all other HF contacts we depend on *sky waves* returned from the ionosphere. The process is one of refraction in an ionized region, but it can be treated as mirror-like reflection at a *virtual height* h' . Signals on too high a frequency or impinging at too steep an angle will pass right through and be lost.

Observatories routinely transmit pulse signals vertically upwards, sweeping through the frequency spectrum to find the *critical penetration frequency* f_0 of each ionized layer and its virtual height. Signals arriving at oblique angles are reflected more readily and are usable up to frequencies given by f_0 multiplied by an obliquity factor. Thus, with reflections from the F_2 layer at say 300 km, the radiation take-off angle and *maximum usable frequency* (MUF) for different ranges would be:

0 km	90°	1.0(f_0)
500 km	48°	1.3(f_0)
1,000 km	28°	1.9(f_0)
2,000 km	28°	2.7(f_0)
3,000 km	4°	3.4(f_0)

Communications within New Zealand is usually by single hop requiring a high to medium angle of radiation. Note that the orientation of a horizontal antenna is immaterial for reflections nearly overhead; it only starts to become significant at radiation angles below 40-50°. The *best propagation* is normally found just below the maximum usable frequency for the path at the time. On a still lower frequency there might be additional reflections at steeper angles, allowing, say, two hops of 500 km as well as one of 1,000 km; signals could arrive in and out of phase, causing fading and distortion. When the critical frequency drops below the operating frequency skip occurs; steep-angled radiation penetrates, while oblique-angled radiation may still be reflected down to maintain communication beyond the skip distance.

Long distance communication around the curve of the earth is by multiple hops. The lower the take-off angle we can achieve the longer each hop and the fewer needed. There is some loss of signal at each reflection in the ionosphere and at the ground, so a low angle of radiation is desirable. It is unlikely that the maximum usable frequency will be the same at every reflection point along the path; the point with the lowest MUF defines the MUF for the whole path. Again, *best propagation* is normally just below the MUF, and

too high for the higher modes (first mode propagation is by the minimum number of hops; second mode is by one more than the minimum, etc).

The *lowest usable frequency* (LUF) is not sharply defined. The signal weakens as it spreads out, loses energy at every reflection, and has to overcome the noise level at the receiving end, but above all it may be severely depleted in traversing the ionized D and E regions over sunlit portions of its path. The absorption varies inversely as the square of the frequency, so, for example, will be four times as severe on 3.5 MHz as on 7 MHz. A high-power (or CW) station will be able to maintain communication on a somewhat lower frequency than a low-power (or SSB) station.

The prediction of probable propagation conditions is based on the worldwide mapping of the averages of the critical frequencies that have been recorded in the past at different hours, in different months, and at different levels of solar activity. The ionization is replenished daily, but the ionizing radiations (UV and X-rays) are not measurable at the ground. It has long been known that the ionized layers are strongest in years of high sunspot numbers, but a better indicator is now available in the microwave noise from the sun, which seems to parallel the ionizing radiations. Daily measurements on 2.8 GHz at Penticton, British Columbia, provides the *solar flux index*, as broadcast from WWV (HH+18) and WWVH (HH+45). Computer programs are available to extract the average (or median) MUF for a particular path at a specified time and solar flux index.

Computer programs cannot anticipate the actual fluctuations in ionization, even in undisturbed conditions. Most programs take account of normal day-to-day variability by providing estimates the three quantities: the *median MUF* (with a 50 per cent chance of being exceeded); the *upper decile* (UD, with a 10 per cent chance of being exceeded); and the *lower decile* (LD with a 90 per cent chance of being exceeded). If estimates of UD and LD are not available they are usually taken as being about 15 per cent above and below the median respectively. The UD is sometimes misleadingly called the *highest possible frequency* (HPF), and the LD the *optimum working frequency* (OWF). The latter does not give the best propagation: it is a compromise frequency used by commercial stations to avoid too many

changes of frequency on bad days. Amateurs are more likely to be interested in exploiting opportunities in the upper decile region. QST currently publishes median and UD curves, *Break-In* median and LD curves for the MUF.

Bursts of X-rays from solar flares may cause temporary loss of short-wave signals over sunlit areas. Enhanced emissions of charged particles from the sun may result in degradation of signals crossing high latitudes, or severe *polar cap absorption*. *Geomagnetic disturbance*, indicated in the three-hourly *K index* or the 24-hourly *A index*, provides evidence of the arrival of particle emissions.

Summary

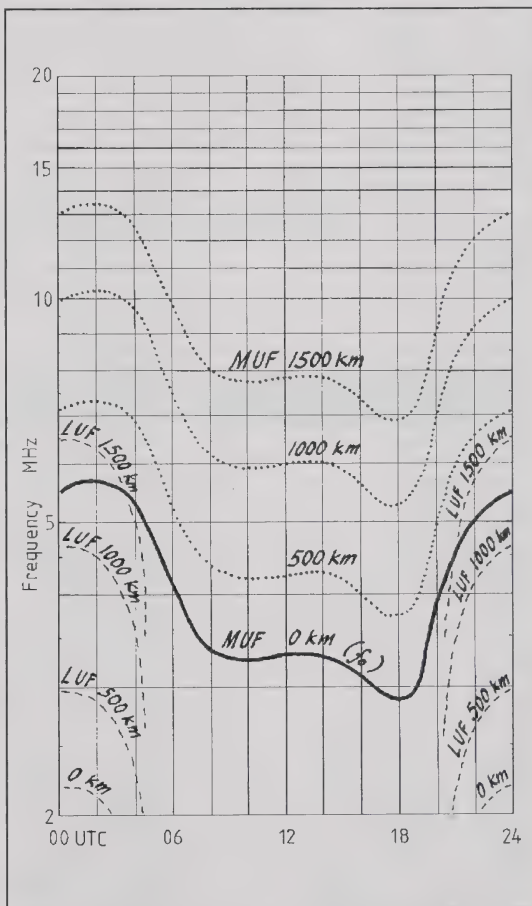
For best propagation use the high-

est available frequency the current MUF will allow, to minimize absorption losses and to avoid multipath fading and distortion.

Moderate to high radiation angles are needed for domestic communications, but use the lowest practicable take-off angles for DX, to minimize the number of hops and maximize the usable frequency.

Listen to the hourly bulletins from WWV or WWVH for the solar flux index and geomagnetic K index.

Use available monthly predictions to identify the most promising times for particular targets, but be prepared for actual MUFs to be significantly different from the predicted median values. Assume the UD values will be about 15 per cent above the median MUFs in *Break-In*.



Median MUFs and approximate LUFs at various ranges (f_0F for central New Zealand, mid-winter, solar minimum).

The Amateur is Considerate ...

never knowingly using the air in such a way as to lessen the pleasure of others.
The Amateur's Code

ALLOCATION OF INTERNATIONAL CALLSIGNS

AAA-ALZ	United States of America	HSA-HSZ	Thailand	TEA-TEZ	Costa Rica
AMA-AOZ	Spain	HTA-HTZ	Nicaragua	TFA-TFZ	Iceland
APA-ASZ	Pakistan	HUA-HUZ	El Salvador	TGA-TGZ	Guatemala
ATA-AWZ	India	HVA-HVZ	Vatican City	THA-THZ	France
AXA-AXZ	Australia	HWA-HYZ	France	TIA-TIZ	Costa Rica
AYA-AZZ	Argentina	HZA-HZZ	Saudi Arabia	TJA-TJZ	Cameroon
A2A-A2Z	Botswana	H2A-H2Z	Cyprus	TKA-TKZ	France
A3A-A3Z	Tonga	H3A-H3Z	Panama	TLA-TLZ	Central Africa
A4A-A4Z	Oman	H4A-H4Z	Solomon Islands	TMA-TMZ	France
A5A-A5Z	Bhutan	H6A-H7Z	Nicaragua	TNA-TNZ	Congo
A6A-A6Z	United Arab Emirates	H8A-H9Z	Panama	TOA-TQZ	France
A7A-A7Z	Qatar			TRA-TRZ	Gabon
A8A-A8Z	Liberia	IAA-IZZ	Italy	TSA-TSZ	Tunisia
A9A-A9Z	Bahrain			TTA-TTZ	Chad
		JAA-JSZ	Japan	TUA-TUZ	Ivory Coast
BAA-BZZ	China	JTA-JVC	Mongolia	TVA-TXZ	France
		JWA-JXZ	Norway	TYA-TYZ	Benin
CAA-CEZ	Chile	JYA-JYZ	Jordan	TZA-TZZ	Mali
CFA-CKZ	Canada	JZA-JZZ	Indonesia	T2A-T2Z	Tuvalu
CLA-CMZ	Cuba	J2A-J2Z	Djibouti	T3A-T3Z	Kiribati
CNA-CNZ	Morocco	J3A-J3Z	Grenada	T4A-T4Z	Cuba
COA-COZ	Cuba	J4A-J4Z	Greece	T5A-T5Z	Somalia
CPA-CPZ	Bolivia	J5A-J5Z	Guinea-Bissau	T6A-T6Z	Afghanistan
CQA-CUZ	Portugal	J6A-J6Z	Saint Lucia	T7A-T7Z	San Marino
CVA-CXZ	Uruguay	J7A-J7Z	Dominica	T9A-T9Z	Bosnia and Herzegovina
CYA-CZZ	Canada	J8A-J8Z	St. Vincent and Grenadines		
C2A-C2Z	Nauru			UAA-UIZ	Russian Federation
C3A-C3Z	Andorra	KAA-KZZ	United States of America	UJA-UMZ	Uzbekistan
C4A-C4Z	Cyprus			UNA-UQZ	Russian Federation
C5A-C5Z	Gambia	LAA-LNZ	Norway	URA-UTZ	Ukraine
C6A-C6Z	Bahamas	LOA-LWZ	Argentina	UUA-UZZ	Ukraine
C7A-C7Z	World Met. Organisation	LXA-LXZ	Luxembourg		
C8A-C9Z	Mozambique	LYA-LYZ	Lithuania	VAA-VGZ	Canada
		LZA-LZZ	Bulgaria	VHA-VNZ	Australia
DAA-DRZ	Germany	L2A-L9Z	Argentina	VOA-VOZ	Canada
DSA-DTZ	South Korea			VPA-VSZ	United Kingdom
DUA-DZZ	Philippines	MAA-MZZ	United Kingdom	VTa-TWZ	India
D2A-D3Z	Angola			VXA-VYZ	Canada
D4A-D4Z	Cape Verde	NAA-NZZ	United States of America	VZA-VZZ	Australia
D5A-D5Z	Liberia			V2A-V2Z	Antigua and Barbuda
D6A-D6Z	Comoros	OAA-OCZ	Peru	V3A-V3Z	Belize
D7A-D9Z	South Korea	ODA-ODZ	Lebanon	V4A-V4Z	Saint Kitts and Nevis
		OEA-OEZ	Austria	V5A-V5Z	Namibia
EAA-EHZ	Spain	OFA-OJZ	Finland	V6A-V6Z	Micronesia
EIA-EJZ	Ireland	OKA-OLZ	Czech Republic	V7A-V7Z	Marshall Islands
EKA-EKZ	Armenia	OMA-OMZ	Slovak Republic	V8A-V8Z	Brunei
ELA-ELZ	Liberia	ONA-OTZ	Belgium		
EMA-EOZ	Ukraine	OUA-OZZ	Denmark	WAA-WZZ	United States of America
EPA-EQZ	Iran			XAA-XIZ	Mexico
ERA-ERZ	Moldova	PAA-PIZ	Netherlands	XJA-XOZ	Canada
ESA-ESZ	Estonia	PJA-PJZ	Netherlands Antilles	XPA-XPZ	Denmark
ETA-ETZ	Ethiopia	PKA-POZ	Indonesia	XQA-XRZ	Chile
EUA-EWZ	Belarus	PPA-PYZ	Brazil	XSA-XSZ	China
EXA-EXZ	Russian Federation	PZA-PZZ	Suriname	XTA-XTZ	Burkina Faso
EYA-EYZ	Tajikistan	P2A-P2Z	Papua New Guinea	XUA-XUZ	Cambodia
EZA-EZZ	Turkmenistan	P3A-P3Z	Cyprus	XVA-XVZ	Vietnam
E2A-E2Z	Thailand	P4A-P4Z	Aruba	XWA-XWZ	Laos
FAA-FZZ	France	P5A-P9Z	North Korea	XXA-XXZ	Portugal
				XYA-XZZ	Myanmar
GAA-GZZ	United Kingdom	RAA-RZZ	Russian Federation		
		SAA-SMZ	Sweden	YAA-YAZ	Afghanistan
HAA-HAZ	Hungary	SNA-SRZ	Poland	YBA-YHZ	Indonesia
HBA-HBZ	Switzerland	SSA-SSM	Egypt	YIA-YIZ	Iraq
HCA-HDZ	Ecuador	SSN-STZ	Sudan	YJA-YJZ	Vanuatu
HEA-HEZ	Switzerland	SUA-SUZ	Egypt	YKA-YKZ	Syria
HFA-HFZ	Poland	SVA-SZZ	Greece	YLA-YLZ	Latvia
HGA-HGZ	Hungary	S2A-S3Z	Bangladesh	YMA-YMZ	Turkey
HHA-HHZ	Haiti	S5A-S5Z	Slovenia	YNA-YNZ	Nicaragua
HIA-HIZ	Dominican Republic	S6A-S6Z	Singapore	YOA-YRZ	Romania
HJA-HKZ	Colombia	S7A-S7Z	Seychelles	YSA-YSZ	El Salvador
HLA-HLZ	South Korea	S9A-S9Z	Sao Tome and Principe	YTA-YUZ	Yugoslavia
HMA-HMZ	North Korea			YVA-YYZ	Venezuela
HNA-HNZ	Iraq	TAA-TCZ	Turkey	YZA-YZZ	Yugoslavia
HOA-HPZ	Panama	TDA-TDZ	Guatemala	Y2A-Y9Z	Germany
HQA-HRZ	Honduras				

ZAA-ZAZ	Albania	4UA-4UZ	United Nations	7JA-7NZ	Japan
ZBA-ZJZ	United Kingdom	4VA-4VZ	Haiti	7OA-7OZ	Yemen
ZKA-ZMZ	New Zealand	4XA-4XZ	Israel	7PA-7PZ	Lesotho
ZNA-ZOZ	United Kingdom	4YA-4YZ	Int Civil Aviation Organization	7QA-7QZ	Malawi
ZPA-ZPZ	Paraguay	4ZA-4ZZ	Israel	7RA-7RZ	Algeria
ZQA-ZQZ	United Kingdom			7SA-7SZ	Sweden
ZRA-ZUZ	South Africa	5AA-5AZ	Libya	7TA-7YZ	Algeria
ZVA-ZZZ	Brazil	5BA-5BZ	Cyprus	7ZA-7ZZ	Saudi Arabia
ZZA-ZZZ	Zimbabwe	5CA-5GZ	Morocco		
ZZA-ZZZ	Macedonia	5HA-5IZ	Tanzania	8AA-8IZ	Indonesia
		5JA-5KZ	Colombia	8JA-8NZ	Japan
2AA-2ZZ	United Kingdom	5LA-5MZ	Liberia	8OA-8OZ	Botswana
		5NA-5OZ	Nigeria	8PA-8PZ	Barbados
3AA-3AZ	Monaco	5PA-5QZ	Denmark	8QA-8QZ	Maldives
3BA-3BZ	Mauritius	5RA-5SZ	Madagascar	8RA-8RZ	Guyana
3CA-3CZ	Equatorial Guinea	5TA-5TZ	Mauritania	8SA-8SZ	Sweden
3DA-3DM	Swaziland	5UA-5UZ	Niger	8TA-8YZ	India
3DN-3DZ	Fiji	5VA-5VZ	Togo	8ZA-8ZZ	Saudi Arabia
3EA-3FZ	Panama	5WA-5WZ	Western Samoa		
3GA-3GZ	Chile	5XA-5XZ	Uganda	9AA-9AZ	Croatia
3HA-3UZ	China	5YA-5ZZ	Kenya	9BA-9DZ	Iran
3VA-3VZ	Tunisia			9EA-9FZ	Ethiopia
3WA-3WZ	Vietnam	6AA-6BZ	Egypt	9GA-9GZ	Ghana
3XA-3XZ	Guinea	6CA-6CZ	Syria	9HA-9HZ	Malta
3YA-3YZ	Norway	6DA-6JZ	Mexico	9IA-9JZ	Zambia
3ZA-3ZZ	Poland	6KA-6NZ	South Korea	9KA-9KZ	Kuwait
		6OA-6OZ	Somalia	9LA-9LZ	Sierra Leone
4AA-4CZ	Mexico	6PA-6SZ	Pakistan	9MA-9MZ	Malaysia
4DA-4IZ	Philippines	6TA-6UZ	Sudan	9NA-9NZ	Nepal
4JA-4KZ	Azerbaijan	6VA-6WZ	Senegal	9OA-9TZ	Zaire
4LA-4LZ	Georgia	6XA-6XZ	Madagascar	9UA-9UZ	Burundi
4MA-4MZ	Venezuela	6YA-6YZ	Jamaica	9VA-9VZ	Singapore
4NA-4OZ	Yugoslavia	6ZA-6ZZ	Liberia	9WA-9WZ	Malaysia
4PA-4SZ	Sri Lanka			9XA-9XZ	Rwanda
4TA-4TZ	Peru	7AA-7IZ	Indonesia	9YA-9ZZ	Trinidad and Tobago

Buy an extra Call Book!

One for the shack and one for the car.

THE PHONETIC CODE

The Phonetic Code may be used with considerable discretion. Its primary purpose is to obviate confusion between letters and figures which have similar sounds, e.g.: BCDEGPTV, AKJ, MN, QU, FS, TWO, THREE, FIVE, NINE.

The possibility of confusion increases greatly under adverse operating conditions such as adjacent channel interference, high level of acoustic and electrical background noise, poor audio quality (including inferior articulation), fading, etc.

Under these conditions more frequent use of the phonetic code may be necessary. However, when there is a complete absence of interference of any kind and signals are perfectly readable, phonetics can be eliminated except for difficult place names, proper names, and

unusual words. Regardless of the quality of the circuit phonetics should always be used for call-signs during the establishment of initial contact. It is important to memorize the code thoroughly and to avoid using substitute words.

Phonetic Alphabet

Some words are likely to be misunderstood when passed over radio telephone circuits, due to phonetic similarity. A number of phonetic alphabets have been introduced to overcome this. The following being the most generally accepted at the present time.

A	ALFA	AL fah	P	PAPA	pah PAH		
B	BRAVO	BRAH voh	Q	QUEBEC	Kwee BECK or		
C	CHARLIE	CHAR lee			Key BECK		
D	DELTA	DELL tah	R	ROMEO	ROW me oh		
E	ECHO	ECK oh	S	SIERRA	See AIR rah		
F	FOXTROT	FOKS trot	T	TANGO	TANG go		
G	GOLF	GOLF	U	UNIFORM	YOU nee form or		
H	HOTEL	hoh TELL			OO nee form		
I	INDIA	IN dee ah	V	VICTOR	VIK tor		
J	JULIET	JEW lee ETT	W	WHISKEY	WISS key		
K	KILO	KEY loh	X	X-RAY	ECKS ray		
L	LIMA	LEE mah	Y	YANKEE	YANG kee		
M	MIKE	MIKE	Z	ZULU	ZOO loo		
N	NOVEMBER	no VEM ber	1 WUN	2 TOO	3 thuh-REE	4 FO-wer	5 FI-yiv
O	OSCAR	OSS cah	6 SIX	7 seVEN	8 AIT	9 NI-ner	0 ZERO

DXCC COUNTRIES LIST

Current Countries Total 329—Revised February 1997—Reproduced courtesy ARRL

PREFIX	COUNTRY	Conti- nent	ZONE	
			ITU	CQ
1A0 ¹	Sovereign Mil. Order of Malta	EU	28	15
1S ¹	Spratty Is.	AS	50	26
3A	Monaco	EU	27	14
3B6, 7	Agelega & St. Brandon	AF	53	39
3B8	Mauritius	AF	53	39
3B9	Rodriguez I.	AF	53	39
3C	Equatorial Guinea	AF	47	36
3C0	Annobon I.	AF	52	36
3D2	Conway Reef	OC	56	32
3D2	Fiji	OC	56	32
3D2	Rotuma Island	OC	56	32
3DA	Swaziland	AF	57	38
3V	Tunisia	AF	37	33
3W, XV	Vietnam	AS	49	26
3X	Guinea	AF	46	35
3Y	Bouvet	AF	67	38
3Y	Peter I.	AN	72	12
4J, 4K	Azerbaijan	AS	29	21
4L	Georgia	AS	29	21
4P-4S	Sri Lanka	AS	41	22
4U	ITU Geneva	EU	28	14
4U	Headquarters, United Nations	NA	08	05
4X, 4Z	Israel	AS	39	20
5A	Libya	AF	38	34
5B	Cyprus	AS	39	20
5H-5I	Tanzania	AF	53	37
5N-5O	Nigeria	AF	46	35
5R-5S	Madagascar	AF	53	39
5T ²	Mauritania	AF	46	35
5U ³	Niger	AF	46	35
5V	Togo	AF	46	35
5W	Western Samoa	OC	62	32
5X	Uganda	AF	48	37
5Y-5Z	Kenya	AF	48	37
6V-6W ⁴	Senegal	AF	46	35
6Y	Jamaica	NA	11	08
7O ⁵	Yemen	AS	39	21, 37
7P	Lesotho	AF	57	38
7Q	Malawi	AF	53	37
7T-7Y	Algeria	AF	37	33
8P	Barbados	NA	11	08
8Q	Maldives Is.	AS/AF	41	22
8R	Guyana	SA	12	09
9A ⁶	Croatia	EU	28	15
9G ⁷	Ghana	AF	46	35
9H	Malta	EU	28	15
9I-9J	Zambia	AF	53	36
9K	Kuwait	AS	39	21
9L	Sierra Leone	AF	46	35
9M2, 4 ⁸	West Malaysia	AS	54	28
9M6, 8 ⁸	East Malaysia	OC	54	28
9N	Nepal	AS	42	22
9Q-9T	Zaire	AF	52	36
9U ⁹	Burundi	AF	52	36
9V ¹⁰	Singapore	AS	54	28
9X ⁹	Rwanda	AF	52	36
9Y-9Z	Trinidad & Tobago	SA	11	09
A2	Botswana	AF	57	38
A3	Tonga	OC	62	32
A4	Oman	AS	39	21
A5	Bhutan	AS	41	22
A6	United Arab Emirates	AS	39	21
A7	Qatar	AS	39	21
A9	Bahrain	AS	39	21
AP-AS	Pakistan	AS	41	21
BS7 ¹¹	Scarborough Reef	AS	50	27
BV	Taiwan	AS	44	24
BV9B ¹²	Pratas Island	AS	44	24
BY, BT	China	AS	(A)	23, 24

PREFIX	COUNTRY	Conti- nent	ZONE	
			ITU	CQ
C2	Nauru	OC	65	31
C3	Andorra	EU	27	14
C5	The Gambia	AF	46	35
C6	Bahamas	NA	11	08
C8-C9	Mozambique	AF	53	37
CA-CE	Chile	SA	14, 16	12
CE0Y	Easter Is.	SA	63	12
CE0Z	San Felix & San Ambrosia	SA	14	12
CE0X	Juan Fernandez Is.	SA	14	12
CE9/KC4 ⁴¹	Antarctica	AN	(B)	(C)
CM, CO	Cuba	NA	11	08
CN	Morocco	AF	37	33
CP	Bolivia	SA	12, 14	10
CT	Portugal	EU	37	14
CT3	Madeira Is.	AF	36	14
CJ	Azores	EU	36	33
CV-CX	Uruguay	SA	14	13
CY9	St. Paul Island	NA	09	05
CY0	Sable Island	NA	09	05
D2-3	Angola	AF	52	36
D4	Cape Verde	AF	46	35
D6 ¹³	Comoros	AF	53	39
DA-DL ¹⁴	Fed. Rep. of Germany	EU	28	14
DU-DZ	Philippines	OC	50	27
E3 ¹⁵	Eritrea	AF	48	37
EA-EH	Spain	EU	37	14
EA6-EH6	Balearic Is.	EU	37	14
EA8-EH8	Canary Is.	AF	36	33
EA9-EH9	Ceuta and Melilla	AF	37	33
EI-EJ	Ireland	EU	27	14
EK	Armenia	AS	29	21
EL	Liberia	AF	46	35
EP-EQ	Iran	AS	40	21
ER	Moldova	EU	29	16
ES	Estonia	EU	29	15
ET	Ethiopia	AF	48	37
EU, EV, EW	Belarus	EU	29	16
EX	Kyrgyzstan	AS	30, 31	17
EY	Tajikistan	AS	30	17
EZ	Turkmenistan	AS	30	17
F	France	EU	27	14
FG	Guadeloupe	NA	11	08
FJ ¹	Saint Martin	NA	11	08
FI ¹¹	Mayotte	AF	53	39
FK	New Caledonia	OC	56	32
FM	Martinique	NA	11	08
FO	Clipperton Is.	NA	10	07
FO	French Polynesia	OC	63	32
FP	St. Pierre & Miquelon	NA	09	05
FR/G ¹⁶	Glorioso Is.	AF	53	39
FR/J, E ¹⁶	Juan de Nova, Europe	AF	53	39
FR	Reunion	AF	53	39
FR/T	Tromelin	AF	53	39
FT5W	Crozet	AF	68	39
FT5X	Kerguelen Is.	AF	68	39
FT5Z	Amsterdam & St. Paul Is.	AF	68	39
FW	Wallis & Futuna Is.	OC	62	32
FY	French Guiana	SA	12	09
G, GX, M	England	EU	27	14
GD, GT, MD	Isle of Man	EU	27	14
GI, GN, MI	Northern Ireland	EU	27	14
GJ, GH, MJ	Jersey	EU	27	14
GM, GS, MM	Scotland	EU	27	14
GU, GP, MU	Guernsey	EU	27	14
GW, GC, MW	Wales	EU	27	14
H4	Solomon Is	OC	51	28
HA, HG	Hungary	EU	28	15
HB	Switzerland	EU	28	14
HB0	Liechtenstein	EU	28	14

PREFIX	COUNTRY	Conti- nent	ZONE	
			ITU	CQ
HC-HD	Ecuador	SA	12	10
HC8-HD8	Galapagos Is.	SA	12	10
HH	Haiti	NA	11	08
HI	Dominican Republic	NA	11	08
HJ-HK	Colombia	SA	12	09
HK0	Malpelo Is.	SA	12	09
HK0	San Andreas & Providencia	NA	11	07
HL-DS	South Korea	AS	44	25
HO-HP	Panama	NA	11	07
HQ-HR	Honduras	NA	11	07
HS-E2	Thailand	AS	49	26
HV	Vatican	EU	28	15
HZ	Saudi Arabia	AS	39	21
I	Italy	EU	28	15, 33
IS0, IM0	Sardinia	EU	28	15
J2	Djibouti	AF	48	37
J3	Grenada	NA	11	08
J5	Guinea-Bissau	AF	46	35
J6	St. Lucia	NA	11	08
J7	Dominica	NA	11	08
J8	St. Vincent & Dep.	NA	11	08
JA-JS	Japan	AS	45	25
JD1 ¹⁷	Minami Torishima	OC	90	27
JD1 ¹⁸	Ogasawara	AS	45	27
JT-JV	Mongolia	AS	32, 33	23
JW	Svalbard	EU	18	40
JX	Jan Mayen	EU	18	40
JY	Jordan	AS	39	20
K, W, N, AA-AK	United States of America	NA	6, 7, 8, 3, 4, 5	
KC6, T8 ¹⁹	Belau (W. Caroline Is.)	OC	64	27
KG4	Guantanamo Bay	NA	11	08
KH0	Mariana Is.	OC	64	27
KH1	Baker, Howland Is.	OC	61	31
KH2	Guam	OC	64	27
KH3	Johnston Is.	OC	61	31
KH4	Midway Is.	OC	61	31
KH5	Palmyra, Jarvis Is.	OC	61, 62	31
KH5K	Kingman Reef	OC	61	31
KH6, KH7	Hawaiian Is.	OC	61	31
KH7K	Kure Island	OC	61	31
KH8	American Samoa	OC	62	32
KH9	Wake Is.	OC	65	31
KL	Alaska	NA	1, 2	1
KP1	Navassa Is.	NA	11	08
KP2	Virgin Is.	NA	11	08
KP4, KP3	Puerto Rico	NA	11	08
KP5 ²⁰	Desecheo Is.	NA	11	08
LA-LN	Norway	EU	18	14
LO-LW	Argentina	SA	14, 16	13
LX	Luxembourg	EU	27	14
LY	Lithuania	EU	29	15
LZ	Bulgaria	EU	28	20
OA-OC	Peru	SA	12	10
OD	Lebanon	AS	39	20
OE	Austria	EU	28	15
OF-01	Finland	EU	18	15
OH0	Aland Is.	EU	18	15
OH0M	Market Reef	EU	18	15
OK-OL ²¹	Czech Republic	EU	28	15
OM ²¹	Slovak Republic	EU	28	15
ON-OT	Belgium	EU	27	14
OX	Greenland	NA	5, 75	40
OY	Faroe Is.	EU	18	14
OZ	Denmark	EU	18	14
P2 ²²	Papua New Guinea	OC	51	28
P4 ²³	Aruba	SA	11	09
P5	North Korea	AS	44	25
PA-PI	Netherlands	EU	27	14
PJ2, 4, 9	Bonaire, Curacao (Neth Antilles)	SA	11	09
PJ5-8	St. Maarten, Saba St. Eustatius	NA	11	08
PP-PY	Brazil	SA	(D)	11
PP0-PY0	Fernando de Noronha	SA	13	11
PP0-PY0	St Peters & St Paul Rocks	SA	13	11

PREFIX	COUNTRY	Conti- nent	ZONE	
			ITU	
PP0-PY0	Trindade & Martin Vaz Is.	SA	15	
PZ	Suriname	SA	12	
R1FJ	Franz Josef Land	EU	75	
R1MV	Mal'y Vysotskiy I.	EU	29	
S0 ^{1, 25}	Western Sahara	AF	46	33
S2	Bangladesh	AS	41	22
S5 ⁵	Slovenia	EU	28	15
S7	Sayechelles	AF	53	39
S9	Sao Tome & Principe	AF	47	36
SA-SM	Sweden	EU	18	14
SN-SR	Poland	EU	28	15
ST	Sudan	AF	47, 48	34
ST0	Southern Sudan	AF	47, 48	34
SU	Egypt	AF	38	34
SV-SZ	Greece	EU	28	20
SV/A	Mount Athos	EU	28	20
SV5	Dodecanese	EU	28	20
SV9	Crete	EU	28	20
T2 ²⁶	Tuvalu	OC	65	31
T30	W. Kiribati (Gilbert Is.)	OC	65	31
T31	C. Kiribati (Brit. Phoenix Is.)	OC	62	31
T32	East Kiribati (Line Is.)	OC	61, 63	31
T33	Banaba Island (Ocean Is.)	OC	65	31
T5	Somalia	AF	48	37
T7	San Marino	EU	28	15
T9 ²⁷	Bosnia-Herzegovina	EU	28	15
TA-TC	Turkey	EU/AS	39	20
TF	Iceland	EU	17	40
TG, TD	Guatemala	NA	11	07
TI, TE	Costa Rica	NA	11	07
TI9	Cocos Is.	NA	11	07
TJ	Cameroon	AF	47	36
TK	Corsica	EU	28	15
TL ²⁸	Central Africa	AF	47	36
TN ²⁹	Congo	AF	52	36
TR ³⁰	Gabon	AF	52	36
TT ³¹	Chad	AF	47	36
TU ³²	Côte d'Ivoire	AF	46	35
TY ³³	Benin	AF	46	35
TZ ³⁴	Mali	AF	46	35
UA-UI1,3,4,6, RA-RZ	European Russia	EU (E)	16	
UA2	Kaliningrad	EU	29	15
UA-UI8,9,0, RA-RZ	Asiatic Russia	AS (F) (G)		
UJ-UM	Uzbekistan	AS	30	17
UN-UQ	Kazakhstan	AS	29-31	17
UR-UZ, EM-EO	Ukraine	EU	29	16
V2	Antigua & Barbuda	NA	11	08
V3	Belize	NA	11	07
V4 ³⁵	St. Kitts & Nevis	NA	11	08
V5	Namibia	AF	57	38
V6 ³⁶	Micronesia (E. Caroline Is.)	OC	65	27
V7	Marshall Islands	OC	65	31
V8	Brunei	OC	54	28
VE, VO, VY	Canada	NA (H)	1-5	
VK	Australia	OC (I)	29, 30	
VK0	Heard Is.	AF	68	39
VK0	Macquarie Is.	OC	60	30
VK9C	Cocos-Keeling Is.	OC	54	29
VK9L	Lord Howe Is.	OC	60	30
VK9M	Mellish Reef	OC	56	30
VK9N	Norfolk Is.	OC	60	32
VK9W	Willis Is.	OC	55	30
VK9X	Christmas Is.	OC	54	29
VP2E ³⁵	Anguilla	NA	11	08
VP2M ³⁵	Montserrat	NA	11	08
VP2V ³⁵	British Virgin Is.	NA	11	08
VP5	Turks & Caicos Is.	NA	11	08
VP8	Falkland Is.	SA	16	13
VP8, LU	South Georgia Is.	SA	73	13
VP8, LU	South Orkney Is.	SA	73	13
VP8, LU	South Sandwich Is.	SA	73	13
VP8, LU, CE9, HF0, LU, 4K1	South Shetland Is.	SA	73	13
VP9	Bermuda	NA	11	05

PREFIX	COUNTRY	Continent	ZONE	
			ITU	CQ
VQ9	Chagos	AF	41	39
VR6	Pitcairn Is.	OC	63	32
VS6, VR2	Hong Kong	AS	44	24
VU	India	AS	41	22
VU	Andaman & Nicobar Is.	AS	49	26
VU	Laccadive Is.	AS	41	22
XA-XI	Mexico	NA	10	06
XA4-XI4	Revilla Gigedo	NA	10	06
XT ³⁷	Burkina Faso	AF	46	35
XU	Cambodia	AS	49	26
XW	Laos	AS	49	26
XX9	Macao	AS	44	24
XY-XZ	Myanmar	AS	49	26
YA	Afghanistan	AS	40	21
YB-YH ³⁸	Indonesia	OC	51, 54	28
YI	Iraq	AS	39	21
YJ	Vanuatu	OC	56	32
YK	Syria	AS	39	20
YL	Latvia	EU	29	15
YN	Nicaragua	NA	11	07
YO-YR	Romania	EU	28	20
YS	El Salvador	NA	11	07
YT-YU, YZ	Yugoslavia	EU	28	15
YV-YY	Venezuela	SA	12	09
YV0	Aves Is.	NA	11	08
Z2	Zimbabwe	AF	53	38
Z3 ³⁰	Macedonia (former Yugoslav Rep)	EU	28	15
ZA	Albania	EU	28	15
ZB2	Gibraltar	EU	37	14
ZC4 ⁴⁰	Cyprus (UK Sov. Base Areas)	AS	39	20
ZD7	St. Helena	AF	66	36
ZD8	Ascension Is.	AF	66	36
ZD9	Tristan de Cunha & Gough Is.	AF	66	38
ZF	Cayman Is.	NA	11	08
ZK1	North Cook Is.	OC	62	32
ZK1	South Cook Is.	OC	62	32
ZK2	Niue	OC	62	32
ZK3	Tokelau Is.	OC	62	31
ZL-ZM	New Zealand	OC	60	32
ZL7	Chatham Is.	OC	60	32
ZL8	Kermadec Is.	OC	60	32
ZL9	Auckland & Campbell Is.	OC	60	32
ZP	Paraguay	SA	14	11
ZR-ZU	South Africa	AF	57	38
ZS8	Prince Edward & Marion Is.	AF	57	38

Zone Notes can be found with Prefix Cross references

DXCC Countries List Notes

1. Unofficial Prefix.
2. (5T) Only contacts made June 20, 1960, and after, count for this country.
3. (5U) Only contacts made August 3, 1960, and after, count for this country.
4. (6W) Only contacts made June 20, 1960, and after, count for this country.
5. (7O) Only contacts made May 22, 1990, and after, count for this country.
6. (9A, S5) Only contacts made June 26, 1991, and after, count for this country.
7. (9G) Only contacts made March 5, 1957, and after, count for this country.
8. (9M2, 4, 6, 8) Only contacts made September 16, 1963, and after, count for this country.
9. (9U, 9X) Only contacts made July 1, 1962, and after, count for this country.
10. (9V) Only contacts made from September 16, 1963 to August 8, 1965, count for West Malaysia.
11. (BS7) Only contacts made January 1, 1995, and after, count for this country.

12. (BV9P) Only contacts made January 1, 1994, and after, count for this country.
13. (D6, FH8) Only contacts made July 5, 1975, and after, count for this country.
14. (DA-DL) Only contacts made with DA-DL stations September 17, 1973, and after, and contacts made with Y2-Y9 stations October 3, 1990, and after, count for this country.
15. (E3) Only contacts made November 14, 1962, and before, or May 24, 1991, and after, count for this country.
16. (FR) Only contacts made June 25, 1960, and after, count for this country.
17. (JD) Formerly Marcus Island.
18. (JD) Formerly Bonin and Volcano Islands.
19. (KC6) Includes Yap Islands December 31, 1980, and before.
20. (KP5, KP4) Only contacts made March 1, 1979, and after, count for this country.
21. (OK-OL, OM) Only contacts made January 1, 1993, and after, count for this country.
22. (P2) Only contacts made September 16, 1975, and after, count for this country.
23. (P4) Only contacts made January 1, 1986, and after, count for this country.
24. (P5) Only contacts made May 14, 1995, and after, count for this country.
25. (S0) Contacts with Rio de Oro (Spanish Sahara), EA9, also count for this country.
26. (T2) Only contacts made January 1, 1976, and after, count for this country.
27. (T9) Only contacts made October 15, 1991, and after, count for this country.
28. (TL) Only contacts made August 13, 1960, and after, count for this country.
29. (TN) Only contacts made August 15, 1960, and after, count for this country.
30. (TR) Only contacts made August 17, 1960, and after, count for this country.
31. (TT) Only contacts made August 11, 1960, and after, count for this country.
32. (TU) Only contacts made August 7, 1960, and after, count for this country.
33. (TY) Only contacts made August 1, 1960, and after, count for this country.
34. (TZ) Only contacts made June 20, 1960, and after, count for this country.
35. (V4, VP2) For DXCC credit for contacts made May 31, 1958, and before, see page 97, June 1958 QST.
36. (V6) Includes Yap Islands January 1, 1981, and after.
37. (XT) Only contacts made August 5, 1960, and after, count for this country.
38. (YB) Only contacts made May 1, 1963, and after, count for this country.
39. (Z3) Only contacts made September 8, 1991, and after, count for this country.
40. (ZC4) Only contacts made August 16, 1960, and after, count for this country.
41. Also 3Y, 8J1, AT0, DP0, FT8Y, LU, OR4, R1AN, VK0, VP8, ZL5, ZS1, ZX0, etc. QSL via country under whose auspices the particular station is operating. The availability of a third-party traffic agreement and a QSL Bureau applies to the country under whose auspices the particular station is operating.

DELETED COUNTRIES

Total 57

Credit for any of these countries can be given if the date of contact with the country in question agrees with the date(s) shown in the corresponding footnote.

PREFIX	COUNTRY	Conti- nent	ZONE	
			ITU	CQ
²	Blenheim Reef	AF	41	39
³	Geyser Reef	AF	53	39
⁴	Abu Ail Is.	AS	39	21
1M ^{1, 5}	Minerva Reef	OC	62	32
4W ⁶	Yemen, Arab Rep.	AS	39	21
7J1 ⁷	Okino Tori-shima	AS	45	27
8Z4 ⁸	Saudi Arabia/Iraq Neutral Zone	AS	39	21
8Z5, 9K3 ⁹	Kuwait/Saudi Arabia Neutral Zone	AS	39	21
9S4 ¹⁰	Saar	EU	28	14
9U5 ¹¹	Ruanda-Urundi	AF	52	36
AC3 ^{1, 12}	Sikkim	AS	41	22
AC4 ^{1, 13}	Tibet	AS	41	23
C9 ¹⁴	Manchuria	AS	33	24
CN2 ¹⁵	Tangier	AF	37	33
CR8 ¹⁶	Damao, Diu	AS	41	22
CR8 ¹⁶	Goa	AS	41	22
CR8, CR10 ¹⁷	Portuguese Timor	OC	54	28
DA-DM ¹⁸	Germany	EU	28	14
DM, Y2-9 ¹⁹	German Dem. Rep.	EU	28	14
EA9 ²⁰	Irini	AF	37	33
FF ²¹	French West Africa	AF	46	35
FH, FB8 ²²	Comoros	AF	53	39
F18 ²³	French Indo-China	AS	49	26
FN8 ²⁴	French India	AS	41	22
FQ8 ²⁵	French Equatorial Africa	AF	47, 52	36
HK0 ²⁶	Bajo Nuevo	NA	11	08
HK0, KP3, KS4 ²⁶	Serrana Bank and Roncador Cay	NA	11	07
I1 ²⁷	Trieste	EU	28	15
I5 ²⁸	Italian Somaliland	AF	48	37

PREFIX	COUNTRY	Conti- nent	ZONE	
			ITU	CQ
JZ0 ²⁹	Netherlands New Guinea	OC	51	28
KR6, 8, JR6, KA6 ³⁰	Okinawa (Ryukyu Islands)	AS	45	25
KS4 ³¹	Swan Islands	NA	11	07
KZ5 ³²	Canal Zone	NA	11	07
OK-OM ³³	Czechoslovakia	EU	28	15
P2, VK9 ³⁴	Papua Territory	OC	51	28
P2, VK9 ³⁴	Territorial New Guinea	OC	51	28
PK1-3 ³⁵	Java	OC	54	28
PK4 ³⁵	Sumatra	OC	54	28
PK5 ³⁵	Netherlands Borneo	OC	54	28
PK6 ³⁵	Celebe & Molucca Is.	OC	54	28
UN1 ³⁶	Karelo-Finnish Republic	EU	19	16
VO ³⁷	Newfoundland, Labrador	NA	09	02, 05
VQ1, 5H1 ³⁸	Zanzibar	AF	53	37
VQ6 ³⁹	British Somaliland	AF	48	37
VQ9 ⁴⁰	Aldabra	AF	53	39
VQ9 ⁴⁰	Desroches	AF	53	39
VQ9 ⁴⁰	Farquhar	AF	53	39
VS2, 9M2 ⁴¹	Malaya	AS	54	28
VS4 ⁴¹	Sarawak	OC	54	28
VS9A, P S ⁴²	People's Dem. Rep. of Yemen	AS	39	21
VS9H ⁴³	Kuria Muria Is.	AS	39	21
VS9K ⁴⁴	Kamran Is.	AS	39	21
ZC5 ⁴¹	British North Borneo	OC	54	28
ZC6, 4X1 ⁴⁵	Palestine	AS	39	20
ZD4 ⁴⁶	Gold Coast, Togoland	AF	46	35
ZS0, 1 ⁴⁷	Penguin Island	AF	57	38
ZS9 ⁴⁸	Walvis Bay	AF	57	38

OPERATING INFORMATION

Deleted DXCC Countries Notes

1. Unofficial prefix.
2. (Blenheim Reef) Only contacts made from May 4, 1967, to June 30, 1975, count for this country. Contacts made July 1, 1975, and after, count as Chago (VQ9).
3. (Geyser Reef) Only contacts made from May 4, 1967, to February 28, 1978, count for this country.
4. (Abu Ail Is.) Only contacts made March 30, 1991, and before, count for this country.
5. (1M) Only contacts made July 15, 1972, and before, count for this country. Contacts made July 16, 1972, and after, count as Tonga (A3).
6. (4W) Only contacts made May 21, 1990, and before, count for this country.
7. (7J1) Only contacts made 14 September 1976 and before count for this country. Contacts made December 1, 1980, and after, count as Ogasawara (JD1).
8. (8Z4) Only contacts made December 25, 1981, and before, count for this country.
9. (8Z5, 9K3) Only contacts made December 14, 1969, and before count for this country.
10. (9S4) Only contacts made March 31, 1957, and before, count for this country.
11. (9U5) Only contacts made from July 1, 1960, to June 30, 1962, count for this country. Contacts made July 1, 1962, and after, count as Burundi (9U) or Rwanda (9X).
12. (AC3) Only contacts made April 30, 1975, and before, count for this country. Contacts made May 1, 1975, and after, count as India (VU).
13. (AC4) Only contacts made May 30, 1974, and before, count for this country. Contacts made May 31, 1974, and after, count as China (BY).
14. (C9) Only contacts made September 16, 1963, and before, count for this country. Contacts made September 16, 1963, and after, count as China (BY).
15. (CNs) Only contacts made June 30, 1960, and before, count for this country. Contacts made July 1, 1960, and after, count as Morocco (CN).
16. (CR8) Only contacts made December 31, 1961, and before, count for this country.

17. (CR8, CR10) Only contacts made September 14, 1976, and before, count for this country.
18. (DA-DM) Only contacts made September 16, 1973, and before, count for this country. Contacts made September 17, 1973, and after, count as either FRG (DA-DL) or GDR (Y2-Y9).
19. (DM, Y2-Y9) Only contacts made from September 17, 1973 to October 2, 1990, count for this country. On October 3, 1990, the GDR became part of the FRG.
20. (EA9) Only contacts made May 13, 1969, and before, count for this country.
21. (FF) Only contacts made August 6, 1960, and before, count for this country.
22. (FH, KB8) Only contacts made July 5, 1975, and before, count for this country. Contacts made July 6, 1975, and after, count as Comoros (D6) or Mayotte (FH).
23. (F18) Only contacts made December 20, 1950, and before, count for this country.
24. (FN8) Only contacts made October 31, 1954, and before, count for this country.
25. (FQ8) Only contacts made August 16, 1960, and before, will count for this country.
26. (HK0, KP3, KS4) Only contacts made September 16, 1981, and before, count for this country. Contacts made September 17, 1981, and after, count as San Adres (HK0).
27. (I1) Only contacts made March 31, 1957, and before, count for this country. Contacts made April 1, 1957, and after, count as Italy (I).
28. (I5) Only contacts made June 30, 1960, and before, count for this country.
29. (JZ0) Only contacts made April 30, 1963, and before, count for this country.
30. (KR6, 8, JR6, KA6) Only contacts made May 14, 1972, and before, count for this country. Contacts made May 14, 1972, and after, count as Japan (JA).
31. (KS4) Only contacts made August 31, 1972, and before, count for this country. Contacts made September 1, 1972, and after, count as Honduras (HR).
32. (KZ5) Only contacts made September 30, 1979, and before, count for this country.

33. (OK-OM) Only contacts made December 31, 1992, and before count for this country.
34. (P2, VK9) Only contacts made September 15, 1975, and before, count for this country. Contacts made September 16, 1975, and after, count as Papua New Guinea (P2).
35. (PK1-6) Only contacts made April 30, 1963, and before, count for this country. Contacts made May 1, 1963, and after, count as Indonesia.
36. (UN1) Only contacts made June 30, 1960, and before, count for this country. Contacts made July 1, 1960, and after, count as European RSFSR (UA).
37. (VO) Only contacts made March 31, 1949, and before, count for this country. Contacts made April 1, 1949, and after, count as Canada (VE).
38. (VQ1, 5H1) Only contacts made May 31, 1974, and before, count for this country. Contacts made June 1, 1974, and after, count as Tanzania (SH).
39. (VQ6) Only contacts made June 30, 1960, and before, count for this country.
40. (VQ9) Only contacts made June 28, 1976, and before, count for this

- country. Contacts made June 29, 1976, and after, count as Seychelles (S7).
41. (VS2, VS4, ZC5, 9M2) Only contacts made September 15, 1963, and before, count for this country. Contacts made September 16, 1963, and after, count as West Malaysia (9M2) or East Malaysia (9M6, 8).
42. (VS9A, P, S) Only contacts made May 21, 1990, and before, count for this country.
43. (VS9H) Only contacts made November 29, 1967, and before, count for this country.
44. (VS9K) Only contacts made on March 10, 1982, and before, count for this country.
45. (ZC6, 4X1) Only contacts made June 30, 1968, and before, count for this country. Contacts made July 1, 1968, and after, count as Israel (4X).
46. (ZD4) Only contacts made March 5, 1957, and before, count for this country.
47. (ZS0, 1) Only contacts made February 28, 1994, and before, count for this country.
48. (ZS9) Only contacts made From September 1, 1977, to February 28, 1994, count for this country.

PREFIX CROSS REFERENCES

A8=EL
AC (before 1972)=A5
AH=KH
AL7=KL7
AM-AO=EA
AT-AW=VU
AX=VK
AY-AZ=LU
CF-CK=VE
CL=CO
CQ-CS=CT
CR3 (before 1974)=J5
CR4 (before 1976)=D4
CR5 (before 1976)=S9
CR6 (before 1976)=D2
CR7 (before 1976)=C9
CR9 (before 1985)=XX9
CT2 (before 1986)=CU
CX0=CE9/VP8
CY-CZ=VE
CY0 (before 1985)=CY9
D7=HL
DM-DT (before 1980)=Y2-9
E2=HS
EA0 (before 1969)=3C
EK, EM-EO, ER-ES, EU-EZ=U
ER (after 1992)=UO
EU (after 1991)=UC
FA-FF (after 1983)=F
FA (before 1963)=7X
FB8 (before 1961)=5R
FB8 (before 1985)=FT
FC (before 1985)=TK
FD8 (before 1961)=5V
FE8 (before 1961)=TJ
FL (before 1978)=JJ
FU8 (before 1982)=YJ
GB=G
GC (before 1977)=GJ/GU
H2=5B
H3=HP
H5 (Bophutatswana)=ZS
H7=YN
HE=HB
HM (before 1982)=HL
HT=YN
HU=YS
HW-HY=F
J4=SV
KA1=JD1
KA2AA-KA8ZZ=JA
KB6 (before 1979)=KH1
KC4 (Navassa)=KP1
KC6 (before 1990)=V6
KG6 (before 1979)=KH2
KG61 (before 1970)=JD1
KG6R, S, T, (before 1979)=KH0
KJ6 (before 1979)=KH3
KM6 (before 1979)=KH4

KP4 (Desecheo)=KP5
KP6 (before 1979)=KH5
KS6 (before 1979)=KH8
KV4 (before 1979)=KP2
KW6 (before 1979)=KH9
KX6 (before 1990)=V7
L2-9=LU
M1 (before 1984)=T7
MP4B (before 1972)=A9
MP4M (before 1972)=A4
MP4Q (before 1972)=A7
MP4T, D (before 1972)=A6
NH=KH
NL7=KL7
NP=KP
OQ (before 1961)=9Q
P3=5B
P4 (before 1986)=PJ
PX (before 1970)=C3
RA, RN=UA
RB-RR=UB-UR
RS=U
RT=UB
RU-RX=U
S4 (Ciskei)=ZS
S8 (Transkei)=ZS
T4=CO
T4 (Venda)=ZS
TH, TM, TO-TQ, TV-TX=F
UB (before 1994)=U
UC (before 1994)=EU
UD (before 1994)=4J
UF (before 1994)=4L
UG (before 1994)=EK
UH (before 1994)=EZ
UI (before 1994)=UJ
UJ (before 1994)=EY
UL (before 1994)=UN
UM (before 1994)=EX
UO (before 1994)=ER
UP (before 1991)=LY
UQ (before 1992)=YL
UR (before 1991)=ES
V9 (Venda)=ZS
VA-VG=VE
VH-VN=VK
VK9 (Nauru)=C2
VP1 (before 1982)=V3
VP2A (before 1982)=V2
VP2D (before 1979)=J7
VP2G (before 1975)=J3
VP2K (before 1984)=V4 or VP2E
VP2L (before 1980)=J6
VP2S (before 1980)=J8
VP3 (before 1967)=8R
VP4 (before 1963)=9Y
VP5 (Jamaica)=6Y
VP5E=VP2E
VP6 (before 1967)=8P

VP7 (before 1974)=C6
VQ2 (before 1965)=9J
VQ3 (before 1962)=5H
VQ4 (before 1964)=5Z
VQ5 (before 1963)=5X
VQ8 (before 1969)=3B
VQ8 (Chagos)=VQ9
VQ9 (Seychelles)=S7
VR1 (before 1980)=T3
VR2 (before 1971)=3D2
VR2 (after 1991)=VS6
VR3 (before 1980)=T32
VR4 (before 1979)=H4
VR5 (before 1971)=A3
VR8 (before 1979)=T2
VS1 (before 1966)=9V
VS5 (before 1985)=V8
VS7 (before 1949)=4S
VS9M=8Q
VS9O (before 1961)=A4
VX-VY=CY0/VE
WH=KH
WL7=KL7
WP=KP
XJ-XO=VE
XP=OX
XQ-XR=CE
XV=3W
XX7 (before 1976)=C9
YU2 (1992)=9A
YU3 (1992)=S5
YU4 (before 1992)=T9
YU5 (before 1992)=Z3
ZB1 (before 1965)=9H
ZD1 (before 1962)=9L
ZD2 (before 1961)=5N
ZD3 (before 1966)=C5
ZD5 (before 1969)=3DA
ZD6 (before 1965)=7Q
ZE (before 1981)=Z2-9
ZK9 (1983)=ZK2
ZM6 (before 1963)=5W
ZM7 (before 1984)=ZK3
ZS3 (before 1991)=V5
ZS7 (before 1969)=3D6
ZS8 (before 1967)=7P
ZS9 (before 1967)=A2
ZV-ZZ=PY
2D=GD
2E=G
2I=G1
2J=GJ
2M=GM
2U=GU
2W=GW
3B-3C (before 1968)=VE
3D6 (before 1988)=3DA
3G=CE
3Z=SP

4A-4C=XE
4D-4I=DU
4J-4L=U
4J (after 1991)=UG
4J1F (before 1994)=R1MV
4K (before 1994)=UA
4K1 (before 1994)=CE9/KC4
4K2 (before 1994)=R1FJ
4K3 (before 1994)=UA
4K4 (before 1994)=UA0
4L (after 1991)=UF
4M=YV
4N-4O=YU
4T=OA
4U1VIC=OE
4V=HH
5J-5K=HK
5L-5M=EL
6C=YK
6D-6J=XE
6O=T5
6T-6U=ST
7A-7I=YB
7G (before 1967)=3X
7J-7N=JA, JD
7J1=JA1 or JD1
7S=SM
7Z=HZ
8A-8I=YB
8J-8N=JA
8O=A2
8S=SM
9A (before 1984)=T7
9B-9D=EP
9E-9F=ET

CONTINENTS

AF = AFRICA
AN = ANTARCTICA
AS = ASIA
EU = EUROPE
NA = NORTH AMERICA
OC = OCEANIA
SA = SOUTH AMERICA

ZONE NOTES

- (A) 33, 42, 43, 44
- (B) 67, 69-74
- (C) 12, 13, 29, 30, 32, 38, 39
- (D) 12, 13, 15
- (E) 19, 20, 29, 30
- (F) 20-26, 30-35, 75
- (G) 16, 17, 18, 19, 23
- (H) 2, 3, 4, 9, 75
- (I) 55, 58, 59



AMATEUR SATELLITES

by
IRVING SPACKMAN
ZL1MO

The Amateur Satellite Service has come a long way in the 36 years since the historic day in 1961 when Amateur Radio entered the region beyond the ionosphere with the launch of OSCAR-1.

Up until 1972 there were no fully serviceable communication OSCARs (Orbiting Satellite Carrying Amateur Radio). Amongst the first five development spacecraft, OSCARs-3 and 4 did function for a short period. The others were used as test vehicles to demonstrate various concepts which could be used in later designs.

On October 15, 1972, OSCAR-6 was launched, to provide the first long-life Mode-A Amateur communication spacecraft. In addition, AO-6 carried a rudimentary digital Code-Store and a 70 cm beacon which, although it failed after three months, set the stage for the use of 70 cm as a downlink in the future generation of Mode-J spacecraft.

There are currently 15 spacecraft in orbit capable of operation within the Amateur Satellite Service with more due for launch during the second half of 1997.

Satellite frequency allocations

International agreements have made provision for the Amateur Satellite Service to operate in the 7, 14, 21, 24, 29, 144, 435, and 1260 MHz bands, plus the 2.4, 3.4, 5.6, 10, 24, 47, 75, 142 and 240 GHz allocations. However, so far operation has only been seen in the bands shown in Table 1.

Amateur Satellite terminology

OSCAR stands for Orbital Satellite Carrying Amateur Radio, and RS is used to identify the predominant series of Russian Amateur satellites because they send RS in their identifying call. UoSATS (University of Surrey satellites) are identified as UoSAT OSCARs 11 and 22 respectively, giving rise to the abbreviations UO-11 etc. The latest satellite launched by Japan for JAMSAT/JARL as JAS-2 (Japan Amateur Satellite) has been called FUJI OSCAR-20 or FO-29.

Operation of satellite transponders is specified by the "MODE", which identifies the frequencies being handled via the transponder. The current types are shown in Table 2.

Note: In some cases two modes may be operated simultaneously.

Later this year, with the launch and activation of the Phase-3D satellite, an alternative terminology for describing the uplinks and downlinks, which have been connected for

a particular day or period, will come into play. This terminology uses the part of the frequency spectrum where the transponder(s) will be operating as the reference (see Table 3).

Each uplink/downlink configuration will employ one or more letters, depending on which configuration is activated. The uplink will be first, so the old Mode-B will become U/V; Mode-J will become V/U, and the old Mode-L and Mode-S designations will disappear. However, the current Mode-A, Mode-K and Mode-T mode designators will still be applied to these satellites which use these modes, as they are well-known by users of the older generation spacecraft.

Because of the flexibility, we now can have L/US or U/Vs as a common choice. Naturally it is not possible to have combinations such as U/U even though both are shown, as the receiver and transmitter cannot be operated simultaneously on the same band.

The operating schedule of the satellite will control the day and time the spacecraft may use a specific mode or be switched off. The spacecraft may be under direct ground control on a day-to-day or weekly basis. Or from a schedule implemented by an on-board computer system—the OBC or IHU (Integrated Housekeeping Unit) as it is known in the Phase-3 series of OSCARs.

Generally, it is advisable to check the source of this data regularly. In some cases the satellite's own beacon transmissions or bulletins are

regularly updated, whilst other satellite command stations such as JAMSAT post the planned operating schedule through the various AMSAT News Services. Bulletins containing such information are sent to the various bulletin boards, and uploaded to the Digital Satellites by authorized stations.

Orbital information and predictions

The orbital reference data used to make prediction calculations is obtained from a set of mathematically precise numbers known as Keplerian Orbital Elements, named after the mathematician and astronomer Johannes Kepler. He was able to formulate a set of rules which all orbiting bodies obey. This data is derived by radar, or optical observation of each spacecraft on a regular basis, and refined over a period of time by organizations such as NORAD and distributed by NASA.

AMSAT-NA receives a complete suite of Keplerian Element sets weekly from NASA for all the amateur, weather and other satellites of interest. AMSAT-NA distributes them via bulletins placed on all the satellites and worldwide Packet radio networks. If you are not able to locate valid up-to-date elements contact ZL1MO via phone or mail for assistance.

The use of the personal computer to calculate information relating to the bearing and elevation from a particular station to each satellite as it comes within range, is now com-

monplace. There are a number of satellite tracking programs written for use with most common personal computers. Most of the software has been written for the various IBM PCs and clones. Apart from creating time related tracking information, some programs can control the position of the antennas, tune the radio equipment and show coloured maps of the earth displaying the track of the spacecraft and the "footprint" of the region which can access the spacecraft.

Other programs permit PC to interact with the digital satellites, automatically uploading and downloading files containing personal mail or information in the form of bulletins or graphics. These have either been uploaded from ground-stations or generated from images captured by the spacecraft.

Where do I get more information?

There are several AMSAT organizations around the world who publish journals on a regular basis for their members. Here in New Zealand we have our own organization—AMSAT-ZL—membership of which yields a variety of services.

On Sunday nights there is a brief satellite report containing predictions and late-breaking news available from both the Waikato VHF Group (695) and the Auckland VHF Group (6625 and linked region repeater) nets.

A considerable amount of satellite news can be found on your local Packet radio BBS. With the assistance of the various SYSOPS who forward material derived directly from the satellites, and other regular contributors. The up-to-date information can arrive on the BBS network within a few hours.

Each month in the NZART journal *Break-In* there is a comprehensive coverage of the Amateur Satellite activities and other space related topics. Membership of the Association provides the magazine and many other services!

For more information on the various AMSAT organizations or other topics covered herein, contact ZL1MO (Call Book address) enclosing an SASE. For information regarding software, please include details of your needs and type of computer and its facilities such as drive type(s), etc.

Operational Amateur spacecraft

The following spacecraft are operational as at May 14, 1997. For operating frequencies and other information refer to the Amateur

Table 1

Band	Frequencies	Remarks
15 m	21.25 to 21.30 MHz	Uplink frequency used
10 m	29.30 to 29.50 MHz	Downlinks frequency used
2 m	145.80 to 146.00 MHz	Both up and downlinks
70 cm	435.00 to 438.00 MHz	Both up and downlinks
23 cm	1260.00 to 1270.00 MHz	Uplink only permitted
13 cm	2401.00 to 2449.00 MHz	Downlink only permitted

Table 2

Mode	Uplink (MHz)	Downlink (MHz)
A	145.8-146.0	29.3-29.5
B	435.0-438.0	145.8-146.0
J	145.8-146.0	435.0-438.0
K	21.25-21.30	29.3-29.5
L	1260.0-1270.0	435.0-438.0
S	435.0-438.0	2401.0-2404.0
T	21.25-21.30	145.8-146.0

Table 3. Phase-3D (OSCAR-?) band designations

Band	Uplink	Downlink
15 m (21 MHz)	H	None
2 m (146 MHz)	V	V
70 cm (435 MHz)	U	U
23 cm (1296 MHz)	L	None
13 cm (2.4 GHz)	S	S
5 cm (5.6 GHz)	C	None
3 cm (10 GHz)	None	X
1.25 cm (24 GHz)	None	K

Satellite Short Form Frequency List.

OSCAR-10: Cat. 14129. Limited Mode-B operation possible depending on satellite/sun relationship. On-Board Computer (OBC) non-operational due to radiation damage to memory, thus preventing any attitude changes to spacecraft.

UoSAT-2 (UO-11): Cat. 14781. Amateur Band research and technology satellite. Currently transmitting on 2 m an extensive range of data and text in ASCII format at 1200 bps AFSK using 1200 and 2400 Hz tones. Also the Mode-S beacon on 2401.5 MHz ($\pm$ Doppler) is usually activated but is running at reduced power due to a fault.

RS-10/11 (COSMOS 1861): Cat. 18129. The two transponders (10 and 11) are separate systems, but carried on and derive power from host spacecraft COSMOS 1861. Both RS-10 and RS-11 can use Mode-K, Mode-KA, Mode-T and Mode-KT. RS-10 Mode-A is currently operating.

PACSAT (AO-16): Cat. 20439. Mode-J AX.25 1200 bps Packet BBS (PACSAT). Downlink narrow-band PSK—Uplink Manchester Encoded NBEM. A Mode-S beacon on 2401.143 MHz ($\pm$ Doppler) is active when the spacecraft is not in eclipse controlled by the OBC.

DOVE (DO-17): Cat. 20440. This MICROSAT type spacecraft was conceived to provide an easily received radio transmission from space carrying data which could be used as educational resource material for use by schools fostering interest about space technology. Transmits telemetry and status information in Packet form on 2 m, also on Mode-S 2401.221 MHz ($\pm$ Doppler).

WEBERSAT (WO-18): Cat. 20441. Weber State College's satellite facility for video data collection from CCD Camera and transmission by Mode-J Packet radio techniques. Other interesting types of data also collected and transmitted in conjunction with the picture information. Downlink uses 1200 bps PSK data encoding. Weberware 1.3 is the latest appropriate software. Currently there is a problem with the OBC which is being examined. New software is being tested to attempt to remedy the problem.

LUSAT (LO-19): Cat. 20442. AMSAT-Argentina's LUSAT. A Mode-J PACSAT similar to AO-16 but also carries an educational transmission using Morse code to transmit data from on-board sensors via the 437.125 MHz frequency.

FUJI-OSCAR-20 (FO-20): Cat. 20480. Mode-J analogue (Voice) only.

RS-12/13 (COSMOS 2123): Cat. 21089. This satellite has a pair of systems, similar to RS-10 and RS-

11, riding on and deriving power from COSMOS 2123. RS-12 and RS-13 can operate under Modes K, KA, T, and KT. RS-12 Mode-K, Mode-KA, Mode-T and Mode-KT. Currently RS-12 is operating using Mode-KT.

UoSAT-5 (UO-22): Cat. 21575. Mode-J PACSAT operating at 9600 bps capable of carrying up to 800 messages or image files captured from the on-board high-performance CCD camera, or from other sources. These files can be downloaded using special software and receivers, modified to pass the higher data rate.

KITSAT-A (KO-23): Cat. 22077. Another Mode-J PACSAT operating at 9600 bps with increased message storage capacity and both wide and narrow angle high performance CCD cameras. This spacecraft is in a different and higher orbit to UO-22. Files are downloaded using software and equipment as used with UO-22.

RS-15: Cat. 22439. The highest orbiting Russian Mode-A spacecraft is different from the other RS series satellites in that it is not attached to a host but is a conventional "stand-alone" satellite. Another feature is a 2 Kb message storage memory, from which a short bulletin can be transmitted by the CW beacon. There are some problems with the storage battery in that when the spacecraft enters eclipse during the orbit, the transmitter power drops and stops if the eclipse duration is too lengthy. When re-illuminated a short period elapses before transmission resumes.

ITAM-OSCAR-26 (IO-26): Cat. 22826. AMSAT-Italy's version of the PACSAT. Similar to AO-16 it has more modern componentry but has been shut down for some time since its launch, due to groundstation and software problems.

KITSAT-B (KO-25): Cat. 22830. This second KITSAT is a near duplicate of KO-23. Built and commissioned by the Korean team (who worked on KO-23 at the University of Surrey) from the Korean Command Centre at KAIST. In an orbit similar to that of UO-22, KO-25 also uses Mode-J 9600 bps FSK BBS, and also carries images taken with the high definition wide and narrow angle cameras.

FUJI-OSCAR-29 (FO-29): Cat. 24278. Mode-J analogue and digital satellite plus digitized voice synthesizer. The digital mode can operate in both 1200 bps PSK and 9600 bps FSK systems. FO-29's Digitalker is activated for a day or so as part of the weekly schedule which changes early on Fridays, UTC time. Mode-JA, Mode-JD (1200) and Mode-JD (9600) are sequenced in order. A standard Packet communication program will operate with FO-29.

RS-16: Cat. 24744. The latest

Russian Amateur satellite system, using as a host a military experimental satellite called ZEYA. RS-16 is in a polar orbit which differs from the earlier RS series, and was launched from a new Russian site. Mode-A operation should have commenced by the time this is published. Currently an experimental UHF beacon, carrying telemetry, is operating, but the 10 m beacon is expected to reappear when the Mode-A system is activated.

Satellite launches pending

SUNSAT is now due for launch in August 1997 on a Delta-2 from Vandenberg Launch Facility as a secondary mission to the P91-1 Argos mission carrying the Danish Everest spacecraft. Sunsat is a 60 kg, 450x450x620 mm Amateur band spacecraft built in South Africa by students at Stellenbosch University. Full details have already been published in *Break-In*. Watch for last minute updates as the launch date approaches.

In the pipeline, and due for launch this year, is a UoSAT designed and built minisatellite called Merlion for Singapore's Nanyang Technological University and Singapore Amateur Radio Society. This project will contain an amateur band Mode-LS transponder with both analogue and digital systems.

We have received information that UoSAT is preparing two new high-technology satellites, one or both of which will be operating as digital store-and-forward systems at a speed of 38.4 Kb after testing at 9600 bps using Amateur Mode-J frequencies. These spacecraft are quoted as due for launch later in 1997.

Finally in this section the launch date for Phase-3D is currently scheduled for mid-September 1997. For details of progress on commissioning after the launch watch *Break-In*. The post launch programme to move the spacecraft to its operating orbit and to activate and test the many transponders and experiments, will undoubtedly take some weeks. Please be patient.

Amateur activities on manned spacecraft

Amateur radio operation is a regular feature from the Russian MIR space station, and from many NASA Space Shuttle missions, when it is identified by NASA on the operations manifest as SAREX (Shuttle Amateur Radio Experiment).

Whilst amateur radio operation by the cosmonauts on MIR is used as part of their recreation, and is not a regularly scheduled activity, Amateur SAREX activity is primarily a scientific education programme, where the astronauts communicate with the pupils of schools and col-

leges within the Shuttle's ground track on each particular mission. If the astronauts have time in their pre- or post-work rest periods, they endeavour to make voice contacts with amateurs within their current "footprint" on an unscheduled basis. Otherwise the SAREX station operates a "Packet Robot" making automatic Packet "connects" issuing QSO (worked) numbers. The SAREX downlink frequency for voice and Packet is 145.55 MHz and the voice uplink is 144.95 MHz while the "ROBOT" uplink is 144.49 MHz. The licensed astronauts may use one special call-sign or their own, but the call-sign of the Robot is always W5RRR-1.

The programme of Space Shuttle linkups with MIR, is part of the development of the International Space Station and the training of American astronauts by long duration space flight. Due to the programme, NASA and SAREX have selected another group of frequencies for these missions. The downlink is 145.84 MHz while uplinks may be either 144.45 or 144.47 MHz. Only Voice operation is presently used on these missions.

Details of upcoming SAREX operation on a Shuttle is usually advised well ahead of time in the "Satellites Column" in *Break-In*. However, some of the SAREX missions flown do not always produce unscheduled contacts in this part of the world for a variety of reasons.

MIR's amateur station also runs a Packet Radio Messaging System, which runs on a fairly regular basis. The MIR operations are on 145.800 MHz (down) and 145.200 MHz (up) duplex for both voice and Packet. The current voice call-sign is R0MIR and the Packet call-sign is R0MIR-1. Voice call-signs may change if a crew member is a licensed amateur. If a licensed American Astronaut is resident on MIR, he may use his own call. There have also been "visitors" from other countries who are licensed amateurs, and have used their own call-signs during their stay.

The PMS on MIR MUST NOT be used as a BBS for traffic with other ground stations, only for messages to the crew on MIR.

A new international programme for MIR Amateur Radio operation has now been established, with MIR Cosmonauts and Astronauts making scheduled contacts with students in schools and colleges worldwide. A sister organization to SAREX, namely MIREX (MIR International Amateur Radio Experiment) has been set up between the USA, Russia and Germany. To facilitate the long term planning for such activities they require international co-ordination, because of the requirements of the Amateur regulations in the coun-

Another section of the amateur equipment which is housed in MIR's

PRIRODA Module is the SAFEX-2 equipment. The SAFEX equipment was developed by the German Space Amateur Funk Experiment Team and fitted into the PRIRODA module prior to launch. The frequencies used for communication with this equipment are shown in Table 4.

Table 4

	Mode-1 (repeater)	Mode-2 (Packet)	Mode-3 (QSO)
Downlink	437.950 MHz	437.975 MHz	437.925 MHz
Uplink	435.750 MHz	435.775 MHz	435.725 MHz
CTCSS	Yes	No	Yes
Speed	—	9600 baud	—

AMATEUR SATELLITE SHORT FORM FREQUENCY LIST

(as at 14/05/97) Make Xerox copy for your shack!

Satellite Collision

Analog Use		Uplink		Downlink	Type	
AO-10		435.025 -0.175	L	145.975 -0.825	UB	Mode-B Analogue TxP
RS-10		145.86-0.90	U	29.36 -0.40	UB	Mode-A Analogue TxP
RS-12		21.21-0.25	U	29.41 -0.45	UB	Mode-K Analogue TxP
RS-12		21.21-0.25	U	145.91 -0.95	UB	Mode-T Analogue TxP
RS-15		145.858 -0.898	U	29.35 -0.39	UB	Mode-A Analogue TxP
RS-16		145.915 -0.948	U	29.415 -0.448	UB	Mode-A Analogue TxP
FO-20		145.900 -146.00	L	435.90 -0.80	UB	Mode-J Analogue TxP
FO-29		145.900 -146.00	L	435.90 -0.80	UB	Mode-J Analogue TxP
Digital Use						
UO-11	UOSAT2	145.825	FB	ASCII Text/Data		
AO-16	PACSAT	145.90, 92., 96	MF	437.051	UP	1200 bps AX25 BBS
DO-17	DOVE	145.825	FB	1200 BPS AFSK Pkt		
WO-18	WEBERSAT	145.90	MF	437.104	UP	1200 bps AX25 Img
LO-19	LUSAT	145.84, 86., 88., 90	MF	437.150 C	UP	1200 bps AX25 BBS
UO-22	UOSAT5	145.90, 145.975	WF	435.120	WF	9600 bps AX25 BBS
KO-23	HL01	145.85, 145.90	WF	435.175	WF	9600 bps AX25 BBS
KO-25	HL02	145.87, 145.98	WF	436.500	WF	9600 bps AX25 BBS
IO-26	ITMSAT	145.875, 90., 925	MF	435.822	UP	1200 bps AX25 BBS
FO-29	8J1JCS	145.85, 87., 89., 91	MF	435.910	UP	1200 bps AX25 BBS
FO-29	8J1JCS	145.87	WF	435.910	WF	9600 bps AX25 BBS

Legend

B: Beacons : AO-10 145.810 Unmodulated; RS10, 29.357 and 29.403; RS12 Mode-K 29.408 and 29.453; Mode-T 145.912 and 145.959; RS15, 29.3525 and 29.3987 MHz RS16 29.408 and 29.451 MHz also 435.504 and 435.548 MHz. UO-11 has same data as 2m on 2401.500; AO-16, 2401.143; DO-17 2401.221.

C: LO-19, CW abbreviated telemetry on 437.125 MHz which may also be an alternative BBS Downlink frequency.

F: FM Narrow Band 15 kHz Deviation max.

WF: FM Deviation up to 20 kHz due to higher data rate.

L: Lower Sideband normal use

M: 1200 BPS Manchester Encoded Data modulating FM.

P: PSK Modulation—Use SSB narrow band Receiver and PSK Modem

U: Upper Sideband normal use.

Notes

1. Frequencies shown are centre frequencies—doppler of up to ± 9 kHz on 70 cm and ± 3 kHz on 2 m will be found on higher elevation passes.
2. Webersat (WO-18) Transmits Image Data weekly with Spectral Data on Mondays UTC, which can be captured in KISS Mode via PB or TLMDC programs. AS OF 01/10/96 Webersat is suffering problems and system is non-operational. Attempts are being made to restore operation.
3. The Digital Mode Satellites (except FO-29) require a Program suite comprising PB/PG (plus PHS/PFHADD), or WiSP for "Windows-based" systems. The Upload Callsign of the spacecraft has a suffix of -12, while the B'cast Download Mode using PB has a callsign suffix of -11. FO-29 operates with standard AX25 (similar to ground-based BBS), and requires standard 1200 or 9600 baud terminal program. Connect to callsign 8J1JCS, and download Help File.
4. AO-10 is not able to be controlled due to a failure of the OBC and batteries. Operates when in sunlight in Mode-B. Good performance depends on spacecraft attitude which cannot be controlled, but changes slowly with time.
5. AO-10 and FO-29 Analogue Transponders use inverting systems to reduce the effect of Doppler. Transmission of LSB produces USB on the downlink, while an downward shift of frequency on the uplink produces an equivalent upward shift of frequency on the downlink.
6. RS10 and RS12 beacons may be used as ROBOT downlinks—Corresponding uplinks are RS-10, 145.820; RS-12, 21.130 MHz.
7. UO-11 is a "Scientific" Type spacecraft. Transmits on several HF frequencies and also on 435.025 MHz on occasions. The normal schedule includes ASCII encoded bulletins, containing latest news, telemetry and Whole Orbit Data (WOD) studies of specific on-board systems and experiments. To support a developing interest in our Microwave bands, the Mode-S beacon is often turned on, although it is running at reduced power out due to a fault.

For any updates to the above send your enquiry with a SASE to ZL1MO at Call Book address.



To many newcomers to amateur radio DX is where it is "at". Many of the newcomers I've met over recent years have "graduated" from the ranks of CB and the opportunity to really be able to chase DX has been one of the big attractions of amateur radio to them.

So what then is DX and why is it such a popular aspect of amateur radio?

DX is really what you want it to be. If you are a newcomer to the HF bands you may think working VK (Australia) constitutes DX. Whereas if you are an experienced DXer you may regard working ZS (South Africa) as more what DX is about, especially if you do it on 80 or 160 m, rather than on one of the higher bands like 20 m.

This article is really to give newcomers to the hobby a few pointers and to share my enthusiasm and that of other DXers with you in the hope that you will get the bug and join us in chasing DX.

So let's talk about gear first of all. What sort of station do you need to work "good" DX? Well basically anything will do, but obviously the better the gear, the better the antenna the more likelihood you have to work DX. Certainly you can work DX with 10 W and a dipole antenna but a good antenna and a good rig will certainly make it easier for you. Sure you can do it with QRP 5 W; but again, running the full legal limit will enable you to be heard just that little bit better.

In my view the best investment you can make in your station is to have a good antenna. Ideally one that will cover the main HF bands. Now that the sunspot count is going up you will soon be able to work solid DX on 20, 15 and 10 m for many hours of the day. Get the antenna up in the air too. Forty feet or so and most beams will really start to perform. The current thought is "go for height". Better a dipole at 100 feet than a beam at 20 feet. Once you get really serious, and have the money and the space too, you can install some big mono band beams and be one of the big signals out of New Zealand. But you can start with that dipole or G5RV and then as you get more enthusiastic or more frustrated advance to a bigger antenna system.

Anyway, let's talk about DX and the challenges that it can offer. DXing can be competitive and you can get recognition for your accomplishments in chasing DX through one of amateur radio's best known certificates. I am referring to belonging to the DX Century Club or DXCC as it is more commonly known. The ARRL in the USA award

the DXCC to any amateur who can prove that they have worked amateurs in at least 100 different countries. One hundred countries is only the start, however. There are over 330 countries recognized by the ARRL DXCC Committee at the moment. So real enthusiasts don't stop at just 100, they try and work as many countries as they can to get on the DXCC Honor Roll. This is a select group of amateurs who have worked just about every country in the world. There are a number of amateurs who have reached that level in New Zealand, but the most famous was the late Jock White ZL2GX, the first amateur in the world to have worked 300 countries.

Not satisfied with working 100 countries, other DX enthusiasts try to obtain DXCC on five bands. This is called 5BDXCC. Or they try it on CW, or QRP, or RTTY. The challenges never end if you want to chase DX and obtain awards and recognition for doing so.

What constitutes a country for DXCC purposes? All of us know there are not really 300 countries in the world. Well, in simple terms a country is any place the ARRL DXCC Committee wants to call a country. They have a number of criteria and the committee meets on a regular basis to discuss the status of different countries. Some new ones are added from time to time and others are deleted. New Zealand has a number of countries—ZL7 Chatham Islands is a different country from New Zealand itself. Kermadec Island ZL8 is another country again. The Vatican State, HV, is a separate country from Italy for DXCC, as is Hawaii KH6 a different country from the USA. Full details of the countries that qualify for DXCC are to be found elsewhere in this Call Book.

So, having decided that you want to chase DX, how do you go about it? Well, in DX terms it's quite simple. You just listen, listen, and then listen some more. Listening is about the best thing a prospective or even an expert DXer can do. That will let you know what band conditions are like, what the propagation is like, when bands are open, which bands it's best to use, etc.

Like any other hobby, it also pays to do some homework first. This can include talking to other people interested in chasing DX. There is sure to be some at your local radio club. You can meet them on air, or join one of the special DX Nets where DX information is exchanged. There is a ZL DX Net that meets every Friday night on 3600 kHz at 0730 UTC. There you will find a number

of really keen DXers who will be only too pleased to share their DX knowledge with you. You will also find information in the "DXing" column in *Break-In* and in other similar amateur radio publications. Just about every amateur radio publication has a DX column of some form attesting to the popularity of this aspect of the hobby all over the world. Just about everywhere you find amateurs you will find some keen DX enthusiasts amongst them.

Another way you can find out when DX is able to be contacted is by looking at the propagation charts in *Break-In*. They give a good indication of when bands are likely to be open to the most popular parts of the world. Also, if you have a computer, you can get programs that allow you to do your own propagation forecasts. I have several inexpensive programs and I find they are pretty right most times about when I am likely to hear stations from other parts of the world.

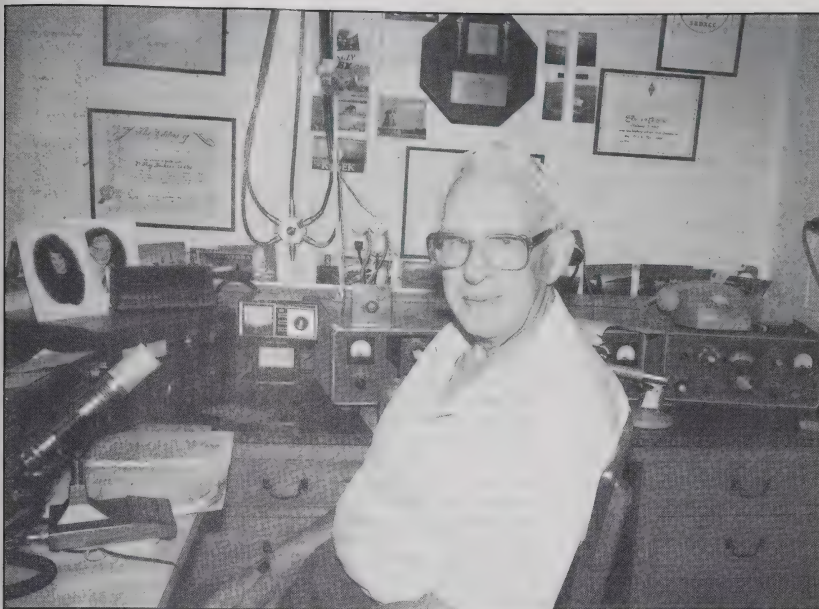
Some people work DX just for the fun of it and they are not interested in the competitive element of it, or even obtaining QSL cards from the stations they have worked. They get a thrill out of talking to a fellow amateur in, say, Kenya, and then being able to share that excitement with others. While the really keen DXer (who wants to obtain DXCC or get on the Honor Roll) won't be happy until a QSL card from that exotic DX station is sitting on the table in front of them. Sometimes this can be expensive. As a DXer you will soon learn what an IRC is and what Green Stamps really are. They used to say in prison, so I am told, that cigarettes were a universal currency. Well, in the world of DX the universal currency is IRCs and Green Stamps. So what are they? An IRC is an International Reply Coupon. The IRC can be exchanged at your local post office for a stamp that will get your letter airmail to most parts of the world. It is not uncommon for you to have to send a couple of IRCs at \$1.80 each, to a rare DX station overseas in the hope that you will get a QSL card back. Many IRCs are never given to post offices, however. Rather, like an extended game of pass the parcel, they just seem to go from ham to ham all around the world. I have a number in my collection at the moment that go back to 1970 and I understand they are still in use. On the other hand there is a certain attraction to the use of Green Stamps. They are US dollars. In many countries Green Stamps are more popular, and more exchangeable, than IRCs.

I have heard some hams com-

plaining that they should not have to send IRCs or Green Stamps and that the DXer at the other end should just meet the cost themselves. Well, in an ideal world that would be true. But picture a ham in some rare location like Nepal getting, say, 1,000 or 2,000 QSL cards each month. Or even you getting that number. Paying a dollar a time to send a QSL card back become very expensive. Hence, it is now accepted that if you want a QSL card, especially from a rare station, you may have to at least help meet the cost of it being sent to you. Sure many hams use the QSL Bureau and NZART provides an excellent service, and free to its members. But normally that's pretty slow, a year to two years to get a QSL card is not at all uncommon and many rare countries don't even have QSL Bureaux or only let members use their QSL Bureaux when they exist. The same applies to DXpeditions. This is when a group, but sometimes an individual, goes to some exotic location and activates it so that others can work a new country. These DXpeditions can cost big dollars. The DXpedition to ZL8 Kermadec Islands in May 1996, which I was part of, cost over \$40,000. With an estimated 40,000 QSL cards to send out too, you can imagine the postage cost if we had to meet all those costs ourselves.

If you get a QSL card probably one of the most important and obvious things you can do to improve your QSL return rate is to fill in your QSL card correctly. Get the details on your card right. Band, mode, signal report and, most of all, the time. A convention amongst DXers is that they all use UTC or universal time. It is useless working a station in some rare location and sending a QSL card with the time listed as 8.30 pm New Zealand. Many DX stations, if they can't easily find the contact in the log, will just stick your QSL card in the rubbish. You have to use UTC for all QSL times. Get the time right too. To get UTC time listen to WWW on 5, 10 or 15 MHz. They announce the time every minute 24 hours a day so you can be sure your time will be right.

Learning a few key words in a foreign language will help too. Most overseas hams use English for making DX contacts so we take the use of English for granted. But you can guarantee that if you even say a couple of words in the overseas station's language that they will be pleased and comment on it. Even a simple Sayonara will be welcomed by a ham in Japan. There are books and tapes in many languages designed for ham use and I am happy to give details if you contact me. Writing a few phrases on the



A typical DX station—Roy Jackson ZL4BO.

I have met quite a number of DXers over the last few years, and one thing I have found many of them have in common is that they have a clear focus. They set goals for themselves. My favourite example of goal setting is Graham ZL3NZ who set a goal of working 200 countries in just 20 weeks from the moment he got his licence. Well he got 198 countries during the period which has to be one terrific achievement.

If you live in the Wellington, Auckland or Christchurch areas and you have Packet radio you may be able to access your local PacketCluster. This can be a good way to meet other DXers and exchange current DX information with them.

I would also recommend that you do some reading. DX columns are good. There are a number of magazines dedicated to just DX and on the Internet there is again tons of DX information. There are also a number of books on how to improve your DXing skills. One I can recommend, and it's available from NZART Upper Hutt, is *The Complete DXer*, by Bob Locher W9KNI. A great book on DXing techniques that even experts can learn from.

DXing, like any aspect of amateur radio, can be what you want it to be. The chance to work a few overseas countries to find out about what life is like there, the chance to get awards for working hundreds of countries, the chance to compare your station with other stations in your area to see if you can get through first or even at all. You can do it 24 hours a day or an hour or so a week. One thing is sure—that DX is something you have to experience to appreciate. It is said that chasing DX is not a bug but more an addictive disease.

If you are interested in finding out more about DX talk to one of your local DXers, join the ZL DX Net, or drop me a line. You will find that we are all keen to encourage more people to follow this exciting aspect of the hobby and to see that you get the same fun out of it that we do.

**Good DXing de Ron Wills
ZL2TT**

back of QSL cards seems to do wonders. A Russian ham saying "Kia Ora Kiwi" certainly gets my attention and improves that station's chances of getting a QSL card too.

There is a certain etiquette in working DX stations. It starts, of course, with listening to see who is on. A good tune around the bands will often locate new countries that you can call and work. Generally they say unless you have a big station it's better to answer people who are calling than to call yourself, although clearly it's not quite as simple as that. New Zealand is still regarded as a good DX catch for many overseas amateurs, so a ZL calling CQ has got quite a good chance that some DX station will respond. It is less likely that this will occur if you live in a country full of amateurs like Japan, or the USA, or you have a really big signal.

The first thing you must do when listening to a DX station calling CQ, for example, is see if they are giving a general or a directional call. A directional calling being CQ Japan or CQ Africa. You are not likely to be too popular if you respond to such a call if you live in ZL. However, if the station gives a general call or calls CQ South Pacific then clearly that station is looking for contacts in this part of the world and you will be welcome to respond. Sometimes the station will be working "split". That means the DX station will call on one frequency but listen on another frequency. This is so the frequency the DX station is using is not blotted out by all the stations calling on that one frequency. Listen carefully and respond

on the correct frequency and you are likely to get an answer. Commonly DX stations will say listening five up or listen 5 to 10 kHz up. So you then have to transmit higher in frequency if you are to succeed in being heard.

Normally rare DX stations are easy to find. The simplest way, especially if conditions are good, is just to listen to see if there are any particular frequencies where there appears to be sheer pandemonium. Thousands of stations, it seems, all calling at the same time. This is called a pile-up. And it can be frustrating because often in a pile-up the DX station will answer the strongest stations first and it can take hours or even days before they hear some of us from New Zealand. A common frequency to hear pile-ups and split frequency operation is 14195 or 21195. These are both very popular DX frequencies.

One way to beat the pile-up free-for-all system is to join some of the DX Nets. These Nets give DX operators the opportunity to work stations in a controlled way with a Net Control station who acts as MC and thus ensures that even the little stations get a crack at the DX stations. Some Nets are well run and others, let's say they could do with some improvements. Some people hate them some love them, but most, I think, would see them as a mixed blessing. DXing like any hobby does depend on individual integrity. You know if you had a genuine contact with the station. You know if the Net Control "helped" you beyond what they should have done and it is over to you to decide if you want to claim that contact or not. My policy is, if in

doubt, don't claim it. Most Nets, however, are well run. They guard their good reputations and don't want to put them into doubt.

There are a considerable number of DX nets that you can check into. They all welcome ZL stations. But two I like to use are the 14222 Net at 0530 UTC and the ANZA (Australia, New Zealand, Africa Net) that meets every day on 14164 at 0500. In both cases the Net Control is a VK or ZL station so you can be sure of a warm welcome. For newcomers especially these are an excellent way to get to work a lot of new countries in double quick time. Another good way is by taking part in contests. In March 1996 I took part in the CW WW WPX contest. This is an all-band contest with the aim to work as many different DX prefixes as you can. I worked over 1300 stations in 134 countries in 36 hours of operation over one weekend. However, if you are a newcomer to DX then a contest like this one may really get you a number of new countries.

The Amateur is Patriotic ...

**With knowledge and equipment
always ready for the service of
country and community.**

The Amateur's Code



What is electromagnetic compatibility? Electromagnetic compatibility (or EMC for short) may sound as if it is a new topic, but it has actually been around ever since electrical equipment was first developed. Electricity and electronics can be put to numerous good applications, but in so doing there needs to be recognition of compatibility between systems. In the case of amateur radio, the possible impacts of operating transmitters are perhaps the most obvious subject to consider for compatibility, however, EMC can also crop up with various other situations. The following list of EMC situations shows the wider scope of EMC in amateur radio:

- to have a contact with a selected amateur station, but with a minimum of interference to or from other amateur stations
- to have an amateur contact without interfering with radio services in other bands, such as broadcast radio or television reception
- to have an amateur contact without receiving disturbances from radio services in other bands, such as from broadcast radio or television transmissions
- to have an amateur radio contact without causing disturbances in nearby electronic apparatus, such as causing extraneous noises in HiFi amplifiers or telephones
- to have an amateur radio contact without receiving disturbances from other electronic apparatus, such as hash from switch mode power supplies or computers.

Should EMC problems arise then there is usually some sort of trade-off among:

- the choices of EMC treatment, and
- the effectiveness of a given EMC treatment, and
- the cost of a given EMC treatment.

There should be very few, if any, circumstances where an amateur operator is forced to cease operation solely because of EMC difficulties. The end objective of clearing EMC problems should be to develop a practical result that is acceptable to all affected parties. There are advantages for amateur operators who are conversant with EMC causes and cures, as they can put their knowledge into practice should an EMC problem crop up with their station.

NZART members have recourse to being able to ask Branch EMC Officers for advice and assistance, and indirectly this includes having access to collective knowledge, experience and information within the Association.

This is a summary article on EMC for the NZART *Call Book*. The following sections briefly cover some of the EMC topics in amateur radio

Some basic physical factors

EMC is fundamentally to do with combinations of electric and magnetic energy interacting from one circuit to another. It is generally desirable to keep one circuit sensibly isolated from another, but sometimes coupling may arise in unforeseen ways. Coupling could be by conduction, induction or radiation. Radiation is, of course, an intended part of communication by radio, so the EMC challenge is to carry out amateur radio activities with minimal interaction with other equipment or services.

In the vicinity of transmitting antennas there are complicated magnetic and electric fields that are a combination of reactive and radiated energy. The reactive aspect cannot be avoided and the resulting signal strength in the near field of an antenna can be quite strong compared to even one wavelength away. The practical result is that signal strength falls off quite rapidly with increasing separation from the antenna. Increasing the separation distance is *always* a winner for reducing EMC problems. Even with EMC problems inside the shack, like one piece of equipment affecting another, it is often surprising that even a modest separation can achieve a significant reduction in the original problem.

When it comes to suppressing unwanted signals, it is usually best to work on finding the root cause and trying to stop the unwanted signal from travelling away from the source. While prevention is better than cure, if the unwanted signal cannot be prevented from developing then the next strategy is to minimize the ways in which it may spread.

EMC countermeasures including shielding, bypassing, filtering or fitting of suitable suppression components within the electrical equipment itself. Many types of plastic equipment cases are transparent to RF and have useless shielding properties.

Lowpass and bandpass filters

Filters are one of the basic electronic building blocks that can make the difference between communications being satisfactory or unsatisfactory. There are many types of filter, designed for many applications and for many source or load impedances. Proper use of filters is central to solving many types of EMC problem.

A lowpass filter in the antenna feeder can be a useful accessory for an amateur HF station. Using a low pass filter between a transceiver and the antenna can give a certain confidence to operating, as it generally results in "overkill" of possible harmonics or other unwanted emissions that happen to fall within television channels used in a given area. Without the low pass filter, some unwanted signals may make it to the antenna and thence have a good chance of spreading to local television receivers.

Be wary of the specifications of cutoff frequency for lowpass filters made for HF operation. Some types of lowpass filter are designed for protecting television broadcast bands used in other countries. In Europe and the USA the lowest band edge for television is 54 MHz. However, in New Zealand, television Channel One has a lower band edge of 44 MHz. For television Channel Two the lower band edge is 54 MHz. For amateur HF operation, the lowpass filter should pass all of the 10 m band, but then start cutting off at higher frequencies, and have high insertion loss at the lowest television channel in your area. It so happens that some USA-manufactured lowpass filters also have in mind suppression of unwanted signals that fall in the US television receiver IF (in the mid-40 MHz range), and these types specify high attenuation above 41 MHz, so are obviously an appropriate type of lowpass filter to use anywhere in New Zealand.

Bandpass filters can be useful for some amateur situations, such as for reducing strong non-amateur signals from getting in and overloading amateur receiver front ends. The 6 m band is an example of where bandpass filtering could be very useful.

Antenna considerations

Antennas are really the key to achieving overall effective performance of an amateur station. For nearly all types of antenna, the higher the antenna is mounted above ground level the better. The following factors can apply to high antennas:

- DX performance is usually better, on any band
- tends to give some separation from local sources of QRM
- can run lower transmitter power to achieve communications.

Ground-mounted vertical antennas have a reputation for having near fields that are "hotter" than arise with other types of antennas. In a suburban situation, ground-mounted verticals tend to radiate directly into nearby houses. By the reverse of what can happen on transmit, on receive these ground-mounted verticals can easily receive neighbourhood QRM. While verticals can be effective for communication on the lower bands, they are unfortunately also potential candidates for EMC problems in built-up areas.

Horizontal centre-fed dipole antennas are inherently much more balanced in operation than ground-mounted verticals. Dipoles have surrounding flux patterns that are similar in shape each side of the centre feedpoint. The actual balance of the near field of a dipole depends on the angle from which it is "viewed". A dipole viewed "side on" presents good balance, but viewed "end on" the near side of the dipole predominates over the far side. On transmit there are unavoidable high voltages around the dipole ends.

Loop antennas are inherently one of the most balanced of all antennas. Much of the near field flux is within the loop. A loop antenna has a more confined near-field pattern than is the case with dipoles. Loop antennas are widely reported as being quieter on receive than other types of antennas, yet are still effective for transmitting. This is basically due to the reduction in near-field size and consequently reduced impact of neighbourhood QRM. Loop antennas tend to be the better performers in the tougher EMC circumstances. A one-wavelength loop can also work on near multiples of wavelengths, and with a tuning unit it can be useful on most bands.

Even if a balanced type of antenna is selected for use, the actual balance of the overall antenna system depends on how the feeder is connected. If the feeder is coaxial cable then using a balun (balanced to unbalanced transformer) is one way of minimizing RF current from flowing back down the outer of the coaxial cable rather than into the antenna proper. As well, a balun can minimize noise from travelling up the

outer of the coaxial cable and making reception seem worse than it would be without the unwanted noise.

Antennas can develop corrosion in connections, or fatigue breaks in some strands of a multi-strand wire. A bad connection or intermittent touching in a fatigued wire not only impairs performance on receive, but can cause arcing when transmitting. Arcing generally results in broad band interference and is obviously an undesirable situation. Even the best filtered transmitters in the country can cause EMC problems if there are bad connections in the antenna. Well constructed and well maintained antennas generally give least EMC problems. As always, antennas should be mounted "in the clear" for best communication results and least invitation for EMC problems.

Transmitting antennas and feeders should be kept away from television antennas or downleads as otherwise it invites large levels of amateur band signals arriving at the television receiver front-end.

Commercially manufactured transceivers

These days there are a great many commercially manufactured transceivers used by amateur radio operators. While it is a shame that home construction is less popular than in yesteryear, it should not be overlooked that the commercial "appliances" bring with them a reasonably high standard of performance in terms of suppression of harmonics and other types of unwanted emissions. Nearly all commercial transceivers include a good modulating stage, good signal filtering and a reasonably designed power output stage. In some countries there are regulatory requirements for limiting unwanted emissions, so commercial transceivers need to be designed for sufficient suppression of unwanted emissions if they are to qualify for sale in those countries. The general result is that "big name" manufacturers tend to have good pedigree for EMC, as they seek sale of their products in many countries.

Power supply considerations

The humble power supply should not be overlooked as a possible EMC situation. For example, on-site hum modulation can occur when RF

gets into mains rectifier diodes. Regulated power supply action may malfunction should RF be conducted into the circuit via AC or DC power leads. General treatment for HF EMC problems is to use 0.01 μ F disc ceramic capacitors to "bypass" all leads and semiconductors but, of course, they should be checked for not slowing down the response of electronic voltage regulators being able to follow variations in current drawn from the supply. VHF EMC problems should be treated with lower value "bypass" capacitors. Do not skimp on safety ratings with capacitors used on mains leads (if a capacitor is not marked as being 230 V AC mains rated, then do not use it on mains wiring). Winding AC or DC leads on ferrite toroids can also be effective at reducing RF getting into the supply.

Hum loops can be a problem when several pieces of equipment are connected up, as the grounded conductors in connecting leads provide a web of paths in which earth return current is able to flow. A very effective way of controlling power supply hum loops is by using split bobbin power transformers and two wire mains leads. A split bobbin transformer with a double insulated rating is legally able to be used with no earth wire, thus a potential hum loop via the mains earth is entirely avoided (for safety reasons this is not a technique to try with other than the proper split bobbin type of transformer).

Limitations of inductors

High frequency inductors are sometimes rated by the manufacturer for operation over a specified frequency range. This is a realistic reflection that unavoidable interwinding capacitance results in self-resonance at some relatively high frequency. For frequencies above self-resonance the "inductor" appears to behave more like a capacitor, and explains why some filters may not deliver the expected results at higher frequencies. Inductors need to be carefully selected if wideband performance is sought.

Limitations of capacitors

Capacitors also become self-resonant at some high frequency, when resonance occurs with unavoidable inductance of the leads and body. Capacitors are generally useful over a much wider frequency range than is the case for inductors. Disc ceramic capacitors are generally the best all round performers for HF and

VHF work. The rated upper frequency range of mains bypass capacitors is sometimes no more than a few megahertz. Polystyrene capacitors are generally the lowest loss type of capacitor in the lower frequency bands.

Ferrite components

There are many type of ferrite, and care is needed to end up with an appropriate type of ferrite for a given application. There is quite a difference between selecting a ferrite for use as a transformer core at signal frequencies and using a ferrite to help absorb unwanted signals. In the former case, transformer cores working at signal frequencies generally require selection of a given type of ferrite material that has low loss in the frequency bands of interest. With tuned transformers, high Q mode of operation is possible. However, for EMC applications ferrite material is generally selected as being well above the frequency range that it would be used as a transformer core, as low Q absorptive mode of operation usually gives best EMC performance. A low Q choke is like having an inductively coupled resistor in the circuit.

Split-core ferrites can easily be fitted over existing wiring, and can effectively add a series impedance to higher frequency signals in the wiring. Split-core ferrites are widely used to reduce radiated noise from computer cables.

Powdered iron components

While ferrite material usually has a much higher permeability than powdered iron, it generally does not have the good power and linearity ratings that are available with powdered iron. Powdered iron is a core material widely used for inductors in transmitter output filters, and most of these are in toroid (ring) form. Toroid cores are ideal for keeping most of the magnetic flux in a controlled loop, which not only leads to fewer turns for a required value of inductance (thus higher Q) but also minimizes the flux that possibly links with other circuits. Flux leakage can lead to EMC problems.

Powdered iron cores are coloured as to recommended frequency bands, and care should be taken to select the right material and core size (power rating) to do the intended job. Any core that runs into saturation can worsen rather than improve the signal quality being

applied to what is hoped to be a filter. (Saturating cores are similar in effect to peak clipping in amplifiers, so core saturation is obviously a situation to be entirely avoided in a filter circuit.)

Telephones with proven RF immunity

Telephones are not intended to be used for RF modulation monitoring, but unfortunately too many of the newer types of electronic telephone have poor rejection of RF.

The Philips/Siemens "Masterest" is an older type of telephone with proven high immunity to RF. These have appeared on sale as second hand telephones from time to time. Telecom rental telephones "Rental 410" and "Rental 412" have been developed to have high RF immunity. The "Economy 810" is electrically identical to a "Rental 410", and is available for sale. No other types of electronic telephone are known to have useful rejection of RF.

Controlling RF pickup in HiFi amplifiers

The input stages of audio amplifiers can act as crystal sets and detect RF that happens to arrive with good level at the input device. The detected parts of the RF envelope that are in the audio range can thus be amplified by subsequent audio stages. A useful way of reducing RF arriving at the first audio stage is to use a series resistor followed by a parallel capacitor to earth. A resistor of a few hundred Ohms (but could be as much as 10 per cent of the amplifier input resistance) and a capacitor of a few hundred picofarads (but with a reactance that does not significantly reduce the level of the highest audio frequencies) can be very effective at controlling RF breakthrough. A suitable value series resistor is considered to be a more consistent performance than an RF choke (RFC). This is because the resistor retains its effectiveness over a very wide bandwidth, whereas the RFC may offer too little reactance to be effective at lower frequencies and become self-resonant below the intended higher limit of operation.

Speaker leads also act as unintended aerials. RF pickup in the amplifier can be reduced by winding the speaker leads on a ferrite rod or ferrite toroid (this of course uses up some of the length of the speaker lead).

COURTESY PAYS
Always check the frequency
Before Transmitting!

New Zealand VHF/UHF/SHF records 1997

Band	Frequency	Type	Stations	Date	Mode	Distance (km)
6 m	50 MHz	Overseas	ZL1MQ-ZB0T	17/04/1981	SSB	18,250*
6 m	50 MHz	E-M-E	ZL2BGJ-WA4NJP	08/09/1988	CW	13,256
2 m	144 MHz	Internal	ZL2ARW/p-ZL1BJB/p	03/02/1982	SSB	1,069
2 m	144 MHz	Overseas	ZL1HH-VK5ZEE	15/01/1986	SSB	3,420
2 m	144 MHz	E-M-E	ZL2BGJ-G3POI	26/05/1985	CW	18,821
70 cm	432 MHz	Internal	ZL2ARW/p-ZL1BJB/p	03/02/1982	SSB	1,069
70 cm	432 MHz	Overseas	ZL2TPY-VK4ZSH/p	13/01/1988	SSB	2,405
70 cm	432 MHz	E-M-E	ZL3AAD-G3SEK	12/03/1989	CW	18,970
70 cm	425 MHz	Internal	ZL2TWS/p-ZL2ASF/p	31/01/1982	Video	373
50 cm	610 MHz	Internal	ZL2UGR/p-ZL2AJI/p	23/04/1988	SSB/FM	302
32 cm	925 MHz	Internal	No Record Yet			
23 cm	1296 MHz	Internal	ZL2ARW/p-ZL1THG/p	30/01/1982	SSB	687
23 cm	1296 MHz	Overseas	ZL1AVZ-VK2FZ/p	30/11/1995	SSB	2,303
23 cm	1296 MHz	E-M-E	ZL3AAD-PA0SSB	13/06/1983	CW	18,657
13 cm	2304 MHz	Internal	ZL2ARW/p-ZL1THG/p	31/01/1982	NBFM	687
13 cm	2304 MHz	E-M-E	ZL2AQE-W3IW/8	18/10/1987	CW	13,931
9 cm	3456 MHz	Internal	ZL2AQE/p-ZL2ARW/p	06/03/1983	NBFM	547
5 cm	5760 MHz	Internal	ZL2AQE/p-ZL2ARW/p	29/01/1983	NBFM	225
3 cm	10368 MHz	Internal	ZL1THG/p-ZL2BFC/p	25/01/1981	WBFM	390
3 cm	10368 MHz	E-M-E	ZL1THG/p-DJ7FJ	12/03/1997	CW	18,340
1 cm	24000 MHz	Internal	ZL2AQE/p-ZL2AZQ/p	20/03/1988	MCW	126

*50 MHz contact ZL1MQ to ZB0T, Long Path.

Notes

1. New Zealand 70 cm band has now been reduced from 420-450 MHz to 430-450 MHz. The Video (TV) record of 31/01/1982 on 425 MHz stays as a 70 cm record.

2. New Zealand 13 cm band has now been reduced from 2300-2450 MHz to 2396 MHz-2405 MHz. The records of 31/01/1982 and 18/10/1987 stay as a 13 cm record. This band is now known as 12 cm band.

3. New Zealand 50 cm band has now been reduced and changed from 610-620 MHz to 614-622 MHz. The record of 23/04/1988 stays as a 50 cm record.

4 ./p means portable operation.

5 ./# means operating in another state or district.

World records 1997

Frequency	Stations	Date	Distance (km)	
50 MHz	(Note 1)			
70 MHz	GW4ASR/p-5B4AZ	07/06/1981	3,465	Sporadic-E
144 MHz	I4EAT-ZS3B	30/03/1979	7,843	TE
220 MHz	KP4EOR-LU7DJZ	09/03/1983	5,905	TE
432 MHz	KH6HME-XE2/N6XQ	15/07/1989	4,142	Tropo
903 MHz	KH6HME-N6XQ	13/07/1994	4,601	Tropo
1295 MHz	KH6HME-XE2/N6ZQ	15/07/1989	4,142	Tropo
2304 MHz	KH6HME-N6CA	14/07/1994	3,973	Tropo
3456 MHz	KH6HME-N6CA	28/07/1991	3,973	Tropo
5760 MHz	KH6HME-N6CA	29/07/1991	3,973	Tropo
10360 MHz	VK5NY/5-VK6KZ/6	30/12/1994	1,912	Tropo
24000 MHz	DH6FAE/p-HB9MIN/p	03/12/1993	397	Tropo
47000 MHz	HB9MIN/p-DF7FJ/p	05/10/1994	184	Tropo
75000 MHz	HB9MIN/p-DK4GD/p	07/07/1995	114	Tropo
145 GHz	OZ1UM/p-OZ9ZI/p	02/07/1994	11	Tropo
241 GHz	DB6NT/p-DF9LN/p	26/06/1995	2	Tropo
474 THz	K6MEP-WA6EJO	09/06/1991	92	Tropo
678 THz	WA7LYI-KY7B/7	08/06/1991	248	Tropo

Notes

1. 6 m is left blank on this list because long path QSOs (those exceeding approximately 20,000 km) have been reported during solar cycles 19 and 21.

2. /p means portable operation.

3. /# means operating in another state or district.

Moonbounce (E-M-E) records 1997

Frequency	Stations	Date	Distance (km)
50 MHz	ZL2BGJ-WA4NJP	09/09/1988	13,256
144 MHz	K6MYC/KH6-ZS6ALE	18/07/1984	19,287
220 MHz	K1WHS-KH6BFZ	17/11/1983	8,139
432 MHz	ZL3AAD-G3SEK	12/03/1989	18,970
902 MHz	K5JL-AF1T	27/05/1990	2,384
1296 MHz	ZL3AAD-PA0SSB	13/06/1983	18,773
2304 MHz	ZL2AQE-WEIWI/8	18/10/1987	13,931
3456 MHz	WB5LUA-DL9EBL	04/06/1995	8,531
5670 MHz	WB5LUA-I6PNN	31/07/1995	9,096
10 GHz	ZL1GSG/p-DJ7FJ	12/03/1997	18,340

Record Holders

D. J. Cottle	ZL1HH
R. M. Gyde	ZL3NE
B. L. Cattermole	ZL2BFC
D. J. Ryall	ZL1AVZ
G. M. Jonas	ZL2BGJ
D. J. Beale	ZL1BJB
K. W. Mundell	ZL2TPY
T. M. Bevan	ZL1THG
J. M. Wysocki	ZL2TWS
A. G. Aston	ZL2AJI
P. R. Smith	ZL2UGR
J. H. Shorland	ZL2AQE
P. R. Williams	ZL2ARW
G. E. Alderson	ZL3AAD
S. F. Fogerty	ZL2ASF
J. Davies	ZL2AZQ
G. Storz	ZL1GSG

Notes

ZL2AJI Deceased
ZL2AQE QRT
ZL2AZQ Now G4KNZ



AREC AMATEUR RADIO EMERGENCY COMMUNICATIONS

MISSION STATEMENT

To be the preferred provider of emergency communications to New Zealand Emergency Services.

The AREC was formed in 1932 following a devastating earthquake in Napier. Today, the AREC consists of 74 Sections throughout New Zealand, each with its own Section Leader who is responsible for the training and conduct of the Section. Each Section is attached to a Branch or Branches of NZART, from where members are drawn.

Management of the AREC is provided in a National Director who is appointed by NZART Council. The National Director likewise appoints a Deputy, Secretary and a Manager for the four districts. These seven people form the AREC Management Group.

The current objectives are:

- ★ To train and provide communications personnel, skilled in assisting organizations during emergencies.

- ★ Maintain a close liaison with the New Zealand Police for Search and Rescue.
- ★ Maintain a close liaison with Civil Defence.
- ★ Maintain a liaison with community organizations.
- ★ Provide and maintain equipment appropriate for emergency operations.

AREC Station identifiers

National Director AREC controls the issue of AREC Station Identifiers, formally known as call-signs and issued by the RFS. AREC Sections are listed in this publication, in identifier order, along with their Section Leaders and Deputies. The Section Identifier, in its basic two letter form, is issued to the Sections' Leaders for their use only. AREC Station

Identifiers for Section use are then issued by the Section Leader for that operation/exercise, with the following being normally reserved:
 "A" = Section Base Station
 "B" = Section Field Headquarters
 "C" = Section Relay Station

AREC operators engaged in SAR activities and operating on SAR frequencies are to use the call-sign allocated for that operation/exercise. This call-sign is to reflect the geographical location of the search area. Civil Defence's radio call-signs are controlled by the CD organization.

AREC emergency frequencies

The following frequencies are reserved for AREC use in emergencies:

1875-1900 kHz

3500 and 3900 kHz
 7100 kHz
 2 m and 70 cm repeaters

The general calling frequencies for AREC stations requiring assistance in emergencies are, 3900 kHz USB or local repeaters and these frequencies are normally monitored by AREC personnel during events such as storms, earthquakes and other significant events that could give rise to emergencies.

AREC Sections' Net

A monthly net is held on 3900 kHz USB at 1930 hours NZST on the third Monday of each month except December. This net uses the AREC Identifier of ZL6E, the AREC master station and is conducted as a contact net for those Sections wishing to seek information or report activities of an AREC nature.

Be prepared for an emergency—What to do—Some suggestions

As an Amateur Radio Operator, who may become involved with an emergency of some kind and having access to assistance via radio could provide timely intervention to those in distress. Preparations for such an eventuality would be good planning and the following suggestions are offered.

1. Be familiar with your local repeater services and frequencies, with a knowledge of the service area.
2. In the event of a SAR requirement, contact your nearest Police station, they will activate their system.
3. For Civil Defence requirements, contact either your Regional or District Councils.
4. Be familiar with your AREC representatives or Club officials, keep a list in the house and car.
5. Use the AREC call frequencies or break-in on any net and identify yourself and the emergency at hand.

When making a call for assistance, by radio, ensure that all the vital details concerning the emergency are passed to the station that is contact the emergency services, this will enable a more appropriate response.

Police, Fire, Ambulance check list

Type of incident

Road accident—type and number of vehicles involved.

—Number and extent of injured or trapped persons.

Type of medical emergency—heart attack, electrocution, etc.

What is on fire—car, building, stove, etc.

Kind of accident—car/truck, car/person, motorcyclist etc.

Hazardous chemicals involved—gases, liquids, fuel, etc.

Location of accident

Street or road name and number, rural number, highway number.

Cross street or road reference.

Suburb and city or town.

Any other geographical detail to clarify location.

Other information

Vehicle registration number—burglar, hit and run, etc.

Description of people—clothing, height, race.

Direction of travel.

(If you are making a telephone call to the emergency services, make sure the above information is gained from the person on the radio before making the 111 call.)

Marine distress call

Intercepting a "MAYDAY" call, briefly listen to see if any other station is responding, then endeavour to contact the distressed vessel on the frequency and mode they are using. Do not get them to change frequency. Ask for details of the distress and write down the details given.

Essential information

Where

Position, latitude and longitude, GPS information, any bearing and distance from geographical feature or place.

What

What is the nature of the distress?

What help is required?

What battery life or restrictions are on radio use?

What lifesaving equipment is on the vessel?

Has an EPIRB been activated?

What is the weather at the distress position?

Who

Description of distressed vessel, name, registration and size.

How many people in distress and their ages.

Colour of vessel and distinguishing marks.

Also record the time and frequency of the distress call. If practical get another person to telephone in the information and stay on the frequency to gather other essential information. Tell the operator what assistance you are giving to help them.

Desirable information

Voyage details

Departed time, date, destination. Last known exact fix, if position unsure.

Medical details

Any specific medical needs or conditions?

Extent of injuries.

Safety equipment

Food and water available.

Other types of radio equipment, VHF, HF.

Flares and types available.

The station called Mayday, in fact, might not hear you calling because of propagation or other factors, but continue to listen, they could transmit their position details blindly. Regardless, report the distress call to the coast guard or Taupo Marine Radio stating the time and frequency, when first heard and any other details of the signal, background noises or how genuine it sounds.

Earthquake

In the event of a moderate or greater earthquake felt in your location, your assistance, through AREC, could be valuable to Civil Defence. Switch to your local VHF repeater and monitor for activity about the event. An AREC station may be requesting reports from stations on what has occurred in their locality. AREC will be gathering this information to put together a "Felt Report" (refer to Earthquake Reporting). This information is then relayed to Civil Defence to help them access the extent of damage that may have resulted.

Apart from estimating the intensity of the earthquake, any information about the state of the utility services and any other significant details known about your surroundings will be useful.

EARTHQUAKE REPORTING

THE MODIFIED MERCALLI SCALE OF INTENSITY OF EARTHQUAKES

Introduction

The severity of an earthquake can be expressed in two terms, namely intensity and magnitude. These two terms are different and are often confused.

Intensity is based on the effects of ground shaking on people, buildings, contents and natural surroundings and varies from place to place within the disturbed region. This observed effect depends on the location of the observer with respect to the earthquake epicentre (location within the earth's crust where the movement occurred).

Magnitude is related to the amount of seismic energy released at the hypocentre (point on the earth's surface directly above the earth movement). This measurement is made by and recorded on instruments (Seismograph) that have a common calibration, thus magnitude is determined instrumentally and uses the Richter Scale to indicate the magnitude. The Richter Scale bears little resemblance to how people perceive the intensity of an earthquake, thus the "Modified Mercalli Scale of Intensity" is measurable by people.

This scale is based on certain key responses being felt or observed by people who can then grade the intensity using this scale, and communicate this to others. When reporting an earthquake you should use this scale to convey the effects that had been felt in your location. When a number of reports are collected from an area and assembled in one place, a summary of this information then becomes known as a Felt Report (indicating the extent of the area it was felt over and what intensities were experienced).

Modified Mercalli Scale of Intensity

MM1

Not felt by humans, except in especially favourable circumstances, but birds and animals may be disturbed. Reported mainly from upper floors of buildings more than 10 storeys high. Tree branches, chandeliers, doors and other suspended systems of long natural period may be seen to move slowly. Water in ponds, lakes, reservoirs etc may be set into seiche oscillation.

MM2

Felt by people at rest indoors, especially by those on upper floors or otherwise favourably placed. The long period effects listed in MM1 may be more noticeable.

MM3

Felt indoors, but not immediately identified as an earthquake by most.

Vibrations may be likened to the passing of a truck. It may be possible to estimate the duration, but not the direction. Hanging objects may swing slightly.

MM4

Generally noticed indoors, but rarely outdoors. Light sleepers may be awakened. Vibrations may be likened to passing heavy traffic, or to the jolt of a heavy object falling or striking the building. Walls and frame of building are heard to creak. Doors and windows rattle, liquids in open vessels may be slightly disturbed. Standing motor cars may rock, and the shock can be felt by their occupants.

MM5

Generally felt outside, and by most indoors. Most sleepers awakened. A few people frightened. Direction and motion can be estimated. Small unstable objects may be displaced or upset. Some glasses and crockery may be broken. Some large windows cracked/damaged. Hanging pictures move. Doors and shutters may swing. Pendulum clocks are affected.

MM6

Felt by all. People and animals alarmed. Many run outside. Difficulty experienced in walking steadily. Slight damage to masonry "D". Some plaster cracks or falls. Isolated cases of chimney damage. Windows, glassware and crockery broken. Object fall from shelves, pictures from walls. Heavy furniture moved. Unstable furniture overturned. Small church and school bells ring. Trees and bushes shake, or are heard to rustle. Loose material may be dislodged from existing slips, talus slopes or shingle slides.

MM7

General alarm of people and animals. Difficulty experienced in standing. Noticed by drivers of motorcars. Trees and bushes strongly shaken. Large bells ring. Masonry "D" cracked and damaged. A few instances of damage to masonry "C". Loose brick and tiles dislodged. Unbraced parapets and architectural ornaments may fall. Stone walls cracked, weak chimneys broken, usually at the roof line. Domestic water tanks burst. Waves seen on ponds and lakes. Water made turbid by stirred up mud. Small slips, caving in of sand and gravel banks.

MM8

Alarm may approach panic. Steering of motorcars affected. Masonry "C" damaged with partial collapse. Masonry "B" damaged in some cases. Chimneys, factory stacks, monuments, towers and elevated

tanks twisted or collapsed. Panel walls thrown out of frame structure. Some brick veneers damaged. Decayed wooden piles broken. Frame houses not secured to foundations may move. Cracks appear on steep slopes and in wet ground. Landslips in roadside cuttings and unsupported excavations. Some tree branches may be broken off. Changes in the flow or temperature of springs and wells may occur. Small earthquake fountains (fissures).

MM9

General panic. Masonry "D" destroyed, masonry "C" heavily damaged, sometimes collapsing completely, masonry "B" seriously damaged. Frame structures raked and distorted. Damage to foundations generally. Frame houses not secured to foundations shifted off. Brick veneers fall and expose frames. Cracking of ground conspicuous. Minor damage to paths and roadways. Sand and mud ejected in elevated areas, with the formation of fissures and sand craters. Underground pipes broken. Serious damage to reservoirs.

MM10

Widespread panic. Most masonry structures destroyed, together with their foundations. Some well-built buildings and bridges damaged. Dams, dykes and embankments seriously damaged. Railway lines slightly bent. Concrete and asphalt roads and pavements badly cracked or thrown into waves. Large landslides on river banks and steep coasts. Sand and mud on beaches and flat land moved horizontally. Large and spectacular sand and mud fissures. Water from rivers, lakes and canals thrown up on banks.

MM11

Wooden frame structures destroyed. Great damage to railway lines and underground pipes.

MM12

Damage virtually total. Practically all works of construction destroyed or greatly damaged. Large rock masses displaced. Line of sight and level distorted. Visual wave motion of the ground surface reported. Objects thrown upward into the air.

Masonry categories

"A"

Structures designed to resist lateral forces of about 0.1g that satisfy the New Zealand building code 1955. Typically, well reinforced ferro-concrete. All mortar is in good condition and the design and workmanship is good. Few buildings

erected prior to 1955 can be regarded as category A.

"B"

Reinforced buildings of good workmanship and with sound mortar, but not designed in detail to resist lateral forces.

"C"

Buildings of ordinary workmanship, with mortar of average quality. No extreme weakness, but neither designed nor reinforced to resist lateral forces.

"D"

Buildings of low standards of workmanship, poor mortar or constructed of weak materials like mud brick and rammed earth. Weak horizontally.

The R-S-T System

Readability

- 1—Unreadable.
- 2—Barely readable, some words distinguishable.
- 3—Readable with considerable difficulty.
- 4—Readable with practically no difficulty.
- 5—Perfectly readable.

Signal Strength

- 1—Faint signals barely perceptible.
- 2—Very weak signals.
- 3—Weak signals.
- 4—Fair signals.
- 5—Fairly good signals.
- 6—Good signals.
- 7—Moderately strong signals.
- 8—Strong signals.
- 9—Extremely strong signals.

Tone

- 1—Harsh, broad hiss, no perceptible tone.
- 2—Harsh, broad hiss, just perceptible tone.
- 3—Harsh, broad non-sinusoidal tone.
- 4—Harsh, broad tone, badly hum-modulated.
- 5—Poor sinewave, badly hum-modulated.
- 6—Good sinewave, pronounced hum modulation.
- 7—Good sinewave, definite hum modulation.
- 8—Excellent sinewave, just perceptible hum modulation.
- 9—Perfect sinewave.

The "tone" scale is used for reporting the amount of hum on a CW signal. If the signal has chirp, the letter "C" can be appended. If the signal has key-clicks, the letter "K" can be appended. Most of the signals you hear will be T9.



Digital communication modes represent one of the fastest growing areas of interest in amateur radio, with the past decade seeing many developments. While there are other digital modes that radio amateurs are experimenting with, RTTY, AMTOR, and Packet Radio are the main digital modes on amateur radio. Newer modes such as GTOR are also emerging as amateur radio continues to develop in the area of digital communications.

RTTY

Baudot code is still the common denominator of digital modes, but it is far from standardised itself. While many use the term Baudot Code, others use the term Murray Code. These two names acknowledge two important telegraph pioneers, both of whom made major contributions in this field, however the correct term is CCITT International Alphabet No. 2. The differences between in practical systems is apparent in the punctuation characters and would not be noticed between two operators unless they used punctuation such as ! : % @ etc. Baudot is sent at differing speeds in different areas. Most US operation is at 45.45 baud (a hangover from a speed limitation by the FCC of 60 wpm for any coded operation), at 45 baud in Europe, while all operation in New Zealand is at 50 baud (after a collective decision to standardise to the commercial speed). Nowadays, computers have almost completely taken over from the mechanical teleprinter, so baud rate changes are no longer the problem they once were.

ASCII

This is used to a very small degree on amateur bands. The proliferation of personal computers in the ham shack, often with in-built communications facilities designed to work on telephone networks, encourages this mode, however there are much more practical ways to use a computer on the air. Transmission speed is generally standardised at 110 baud, however faster rates, such as 200 and 300 baud, are used, with varying degrees of success.

AMTOR

One common problem with direct printing RTTY (such as Baudot and ASCII) is errors in reception. If there is any slight disturbance to the received signal, it is quite likely that an incorrect character will be printed. This is not a major problem in the average amateur conversation, as the rest of the sentence will usually fill in the gaps. However, on all but the best contacts, important details (e.g. frequencies), must be repeated a couple of times to ensure

that the other station gets what you want to say. This form of operation may be satisfactory for hams but it is not satisfactory for commercial operation such as ship to shore Teletype.

AMTOR can be thought of as a more advanced form of RTTY, which includes automatic acknowledgement of each group of characters sent, or a request for repeat. This results in error-free communication (at the expense of speed, especially in poor conditions). The protocol is very specific so there is no variation in the transmission speed of 100 baud. As this mode requires more sophisticated equipment able to handle the error checking functions and a relatively fast receive/transmit changeover in your radio, the number of operators is a little down on the simpler modes.

The main feature of AMTOR is that it uses the Moore code, which is made up of seven unit characters (bits), but utilising a select few of the possible combinations, thus allowing a receiving station to tell if a received code is correct or not. AMTOR operation involves the transmitting station sending three characters, then waiting for a response from the receiving station. The response will either be "roger, go ahead", or "no go" (or perhaps nothing at all if the path has faded out). The transmitting station then either repeats the last three characters, or sends the next three. This operation is a form of ARQ (& Automatic ReQuest), known as AMTOR Mode A.

By sending text in bursts of three characters, awaiting one character reply, then sending three more, AMTOR requires radio equipment which can change from transmit to receive in a very short time. On-air AMTOR has a characteristic fast "chirp-chirp" sound.

There is another version of AMTOR (Mode B) which also uses the Moore code (i.e. has the ability to detect errors), but is an FEC (Forward Error Correction) system, rather than an ARQ system. Instead of a transmit and wait acknowledgement system, Mode B simply transmits every character twice, three characters apart. This allows the receiving station two attempts at getting it right. As a result, Mode B AMTOR is more reliable than RTTY, but not as reliable as Mode A AMTOR. Mode B, as it does not require acknowledgement responses from the receiving station, is used for news broadcasts, and CQ calls. Mode A also is limited by the specified timing to short-path HF contacts due to the radio propagation time

around the world, so Mode B is necessary for some contacts.

PACKTOR

Pactor is a hybrid between packet and AMTOR techniques to try and provide a faster and more robust protocol for HF data links.

PACKTOR transmits either 12 or 24 characters, depending on the baud rate, either 100 or 200. Four characters are used for control including two checksum bytes. Errors are detected at the receiver by comparing the checksum with the accompanying data. PACTOR uses the AX-25 checksum (CRC-16). The receiver requests new data, a retransmission of data or a change in system baud rate.

PACTOR has become a popular HF mode, as it is more efficient than AMTOR or Packet in most situations. It is readily available in commercial data controllers, and also available in software form for simple modem designs.

GTOR

M. Golay in the USA devised the protocol that brought back those good photos of Saturn and Jupiter from the Voyager space shots. His protocol has now been adapted by Kankronics for Ham Radio use.

GTOR is a protocol about four times as fast as the next fastest and has good reliability, which it gets from

1. 16 bit CRC error detection.
2. Golay encoding with ARQ for error detection.
3. Interleaved data for noise disturbance.
4. Huffman compression and run length encoding for improved throughput.
5. 300,200 OR 100 baud to suit varying conditions.

It can transmit a full ASCII set and call signs of up to 10 characters. GTOR is a linked mode between one station and one other using a 2.4 second cycle—data frame 1.92 sec and acknowledgement 0.16 sec.

GTOR transmits 24, 48 or 72 characters depending on baud rate, either 100, 200 or 300 respectively. Errors are detected at the receiver using a CRC-16 checksum. The receiver requests new data, a repeat of the last data or parity, or a change in baud rate.

GTOR is gaining some ground in HF data communications, but as it is only available from one manufacturer. It has not taken off as quickly as its benefits would suggest.

CLOVER

Clover is another high performance HF data protocol, but like GTOR is proprietary and is also quite expensive. It can achieve high data throughput on an HF channel using various techniques, including data compression.

RTTY/AMTOR Mailboxes

There are a number of SELCAL/Mailbox stations operating, including ZL2HO and ZL1AMW which monitor 7045 kHz in Baudot, and VK2AGE who monitors 7045 kHz in AMTOR ARQ.

Packet Radio

Packet Radio is another error-free mode, which has added advantages of higher speed (if good radio signal is available) and increased economy of spectrum by time-sharing a channel with other users. Transmitted text is collected into "packets" before sending. Within this packet is the call sign of the packet destination, the source (i.e. sender's) call sign, control information on the type of packet being sent (control, acknowledgement, information), data (where applicable), and a CRC (Cyclical Redundancy Check) which enables the receiver to determine whether there are any errors in the received packet. The exact format of the packet is laid down by an agreed protocol. A full explanation of packet radio can be found in recent editions of the ARRL Handbook, and other such publications.

The first protocol widely used by amateurs was known as the VADCG V1 protocol. While this protocol facilitated early experimentation, it had a number of limitations. To overcome these limitations, a new protocol called AX.25 was developed. AX.25 is based on X.25, a commercial computer communications protocol.

Packet radio requires the use of a computer to handle the protocol and the exchange of data. Either programming a personal computer may do this, or by using a dedicated computer called a TNC (Terminal Node Controller) connected between a computer/terminal and the radio. The TNC approach leaves the operator's computer free to handle application activities. A hybrid system that uses software and a computer I/O card is another alternative that has benefits of both the programming approach and the TNC approach.

Packet Radio has traditionally been used at data rates of 1200bps using ASFK modulation. This is the currently the predominant data rate here in New Zealand. With advances in applications and technology this

has become a rather limiting factor, and 9600bps operation is becoming more common. 9600bps operation is starting to become more common in main centres around New Zealand. Higher speeds are also being used on the higher bands for networking applications, and speeds of 19200bps through to 2Mbps are becoming more common.

Packet Radio Glossary

7PLUS: Seven Plus, a file encoding program used to allow the transfer of non-text data via the packet BBS network.

AFSK: Audio Frequency Shift Keying, a modulation technique used for digital communications, e.g. 1200bps terrestrial packet.

AMTOR: A digital mode for HF use that is more efficient than Packet.

APRS: Automatic Position Reporting System. This is a program that uses packet radio to track the position of stations.

ARP: Address Resolution Protocol, a part of the TCP/IP suit of protocols.

AX.25: A modified version of the X.25 packet switch protocol for use by amateur radio on radio channels.

Baud: Changes per second, n baud will only equal n bps when the changes in question are a bit. Some modulation techniques may transmit more than one bit for each signal value.

BayCom: The name of a program that does most of the work that a TNC does, in software rather than in hardware. Also used as a reference to modems that are compatible with this program.

BBS: Bulletin Board System, a computer-based system for posting information in the form of private messages or public bulletins for retrieval by others.

BQ or G8BPQ: A program written by G8BPQ, that allows different programs to interface to different TNC's, and also provides some packet networking functions.

BPS: Bits per second.

CRC: Cyclical Redundancy Check

DRSI: Digital Radio Systems Inc, a company that used to produce standalone TNC's and TNC cards for the Amateur Radio market.

DSP: Digital Signal Processing, a system where analogue signals are converted to digital signals and manipulated by software techniques. Used in modern filter, modem, and other circuit designs.

FBB: A packet radio bulletin board system (BBS) program, written by F6FBB.

FSK: Frequency Shift Keying, a modulation technique used for digi-

tal communications, eg 9600 bps packet.

FTP: File Transfer Protocol, a part of the TCP/IP suit of protocols.

JNOS: Johannes's Network Operating System, an adaptation of NOS, the Network Operating System by KA9Q. An amateur radio implementation of TCP/IP protocols and applications for DOS and available for other operating systems.

KISS: Keep It Simple Stupid, a cut down version of the AX.25 protocol for use by computer programs and other protocols, such as TCP/IP.

MODEM: Modulator/Demodulator, used to modulate and demodulate digital signals for use on an analogue circuit, such as a radio channel.

NETROM: A packet networking firmware program used by dedicated network nodes or digipeaters.

Node: A station in a network of NetRom, or similar networking protocols, usually routing between more than one port.

Packet: General term for packet radio using AX.25.

Pactor: A digital mode based on a combination of the benefits of Packet and AMTOR.

paKet: A packet radio terminal program.

PSK: Phase Shift Keying, a modulation technique used for digital communications, e.g. 1200bps satellite packet.

R95: Radix 95, a file-encoding program used to allow the transfer of non-text data via the packet BBS network.

RUDAK: Regenerative Transponder for Digital Amateur Communications (abbreviation comes from German translation)

SCC: Serial Communications Controller, a type of electronic chip used in most stand alone TNC's and TNC cards.

SLIP: Serial Line Internet Protocol, a part of the TCP/IP suit of protocols.

TAPR: Tucson Amateur Packet Radio corporation, see above.

TCP/IP: Transmission Control Protocol/ Internet Protocol. A suite of protocols used for networking computers in many environments, including packet radio.

TFPCR: A program that allows software written to the WA8DED Host Mode specification to communicate with a TNC that supports KISS mode.

TFPCX: A program that allows software written to the WA8DED Host Mode specification to communicate with a Baycom compatible modem.

TheNet: A packet networking firmware program used by dedicated network nodes or digipeaters.

TNC: Terminal Node Controller, another name for a packet assembler/packet disassembler (PAD) as developed for amateur packet radio.

TPK: A very good packet terminal program that includes special features for use with the FBB BBS system.

USCC: Universal Serial Communications Controller, a communication card by the Baycom group that supports a number of different modems. **WA8DED:** A Host Mode protocol for programs to communicate with a TNC that has support for this mode.

XIJ: An improved version of the TheNet packet networking firmware program used by dedicated network nodes or digipeaters.

YAPP: Yet Another Packet Program, a packet terminal program. Also a packet binary file transfer protocol used by many different packet terminal programs.

Common Operating Frequencies

RTTY/AMTOR

ZL net frequencies:

80 metres	3545 kHz
40 metres	7045 kHz

International Operating Frequencies:

80 metres	3610-3640 kHz
40 metres	7040-7060 kHz
20 metres	14080-14100 kHz
10 metres	28080-28100 kHz

Packet Radio

ZL operating frequencies:

2 metres	144.650 MHz (most operation)
	144.675
	147.500
70cms	432.650
	432.675
	438.300

As packet operation spreads and expands these allocations are being re-evaluated. It is also possible that some areas use frequencies other than those suggested. There are a number of Data Repeaters in operation that have their own frequencies allocated as part of the national band plan, see the Repeater section of Call Book for details.

International Operating Frequencies:

40 metres	7030-7040
20 metres	14100-14150

Packet BBS Operation

There is a large number of packet radio Bulletin Board Stations operating in ZL, mostly with access on 2 metres, and some with access on 70cms as well. To use these stations, simply connect, and enter your command. The command "H" for help responds with a list of features of that BBS.

Facilities available on a BBS are very comprehensive, however the most commonly used commands are:

LM—"List Mine" This will provide a list of message numbers, and subjects, for messages to you.

Rxxxx—"Read message number xxxx" After listing your messages, to read one, note the message number, and enter a read command for that number.

KM—"Kill Mine" Kill all messages addressed to me, that I have read. Note that you cannot kill a message until you have read it.

L—"List messages" This lists all new messages and bulletins on the BBS since you last listed messages. Note that if this is your first time on a BBS, or you have not checked in for some time, this command will result in a very long reply.

SP ZL1XYZ—"Send a personal message to station callign ZL1XYZ" The BBS will then prompt you for a subject (one line of up to 60 characters), then the message content. End the message with either "EX" or control "Z".

B—"Bye" This logs you off the BBS, and it initiates a disconnect from you. In fact you can log off simply by disconnecting.

BBS forwarding

The packet BBS network in ZL is capable of forwarding a message throughout New Zealand, and to most locations overseas. Most BBS's connect to ZL2WA as a forwarding "hub", which connects to the other BBS's on the National System, and to the various HF and Satellite gateways that are available for international traffic.

A table of current main-centre bulletin boards is included in the "Operating Information" section of Call Book. To send a message to a distant amateur, note the callign of their local BBS, and use that as the message address. For example: If you reside in Auckland, and have a message for an amateur in Christchurch, all that is required is for you to enter an @ in the send command to the appropriate BBS, e.g.:

SP ZL3ABC @ ZL3AC

This will command the BBS network to forward your message to the ZL3AC BBS (In Christchurch). The forwarding is completely automatic, and often the message will pass through a number of BBS on the way.

Interested amateurs from their home, using their own computers operate many BBS, therefore new stations often appear, and some old stations go off the air. For this reason a current list of active BBS is difficult to maintain. A number of Branches of NZART have set up BBS's, using Club resources. By

their nature these stations are somewhat more permanent, so they are indicated in the table.

Forwarding mail overseas

To send mail overseas, you should know the destination operator's local BBS hierarchical address, then simply insert the destination address as usual. For example, to send a message to G1DIL at the GB7BBS BBS, simply enter this into your local BBS as:

SP G1DIL @ GB7BBS.#28.GBR.EU

The hierarchical address specifies the local BBS, the region that it is in, the Country that it is in, and the continent.

From this full address your local BBS can determine the best path to get your message to its destination.

It is possible that if your local BBS is running a recent version of FBB, and it has the White Pages service turned on, and someone else has had a message from the callsign that you wish to send a message to, you will only need to specify the callsign of the recipient. All the other information will be obtained from the White Pages database. However to be sure that your message will get through you should specify the full address.

Digipeaters

A number of networking digipeaters have been installed on hilltops. These consist of standard TNC's operating special software, providing a store and forward packet repeater.

The most common software being operated currently is "TheNet", or "X1", which provides a form of networking based on "Nodes". Each digipeater regularly broadcasts a list

of other digipeaters (nodes) it can hear, and that it has heard about from the next digipeater down the chain. This way all digipeaters in a network build up a list of all others, and the route to each other.

A user simply connects to his local digipeater, and enters the command "N", for nodes, and the digipeater will reply with the list of the nodes in the network. The user then issues a command to the digipeater to connect to the desired node, and the digipeater will automatically connect through all the required intermediate digipeaters to the destination. The user can then command the far end digipeater to connect to his destination home station.

Another type of digipeater software is called "Rose". This also provides network working, but in a very different way to "TheNet". While Rose is very widespread in Australia, its incompatibility (for automatic routine) with the more established "TheNet" means we are unlikely to see much of this system in New Zealand.

A number of home-station and BBS systems directly communicate with "TheNet" digipeaters, and announce themselves as "nodes" on the digipeater list. This allows simple direct connection to a far end user from your local digipeater. For example Hamilton ZLIUX BBS uses G8BPQ networking software, so appears in the nodes list of local digipeaters as "HAMBBS:ZLIUX". Hence all that is needed to connect with the BBS from away from Hamilton is to connect to your local digipeater, and enter a command to connect to HAMBBS, e.g.:

C HAMBBS

As ZLIUX is known to the digipeater, it will automatically pro-

vide the intermediate connections through the network to the BBS for you. As a cautionary point, the BBS software is usually set up to ensure its identity is passed on to only a limited number of digipeaters away from home location, to discourage DX BBS operation, which unnecessarily ties up the digipeater network.

Data Repeaters

Data Repeaters work in a similar way to a standard voice repeater, but are used for data to get extended coverage. The use of a duplex repeater has advantages over a digipeater for performance, but does not have any advanced network capabilities. Usually a Data Repeater will regenerate the data signal, giving extra performance advantages by making all transmitted and received signals more compatible.

A hybrid of repeater technology and the intelligence of network capabilities of the digipeater are starting to become a new standard for packet networking.

TCP/IP

TCP/IP is a protocol set that is used in commercial computer networking, and is also available for use over packet radio. It offers many services and facilities over and above those found on a standard packet BBS. There is growing interest in TCP/IP in New Zealand. For a starters kit contact Andy Hopkins ZLI1VAH. For IP address allocations contact Roger Harrington ZLITK for details of your local IP address coordinator.

Software

There is a wealth of software available for the different digital modes, but in particular for packet radio.

Most software for amateur radio use is available free, or very cheap through the shareware principle. There is also a large amount of commercial software available as well. The software that you use will depend on your hardware, the computer system that you use, and your own preferences. For most users the main piece of software is a packet terminal program. To find out about available software ask around to see what others are using for the same equipment that you have.

Current Information

See the Digital Modes column in Break-In for current information. If you have access to packet then much information is available as bulletins on the packet radio network.

A number of regions also have Packet or Data special interest groups which may have their own meetings and maybe a separate newsletter, so contact your local club or branch or local hams to see if such a group exists.

There is also a regular weekly news broadcast on ZL digital mode happenings. The ZL Data News is prepared at the shack of ZLIAMW from contributions sent by post, RTTY and packet. Text is also obtained from packet BBS stations and Selcals on 7045/3545kHz. This news is transmitted weekly on Sunday mornings at 0930hrs (local) and repeated at 1900hrs. The morning transmission is on 7045kHz and the evening transmission is on 3545KHz. It is first sent in Baudot at 75 baud, then repeated in AMTOR mode B (FEC) on both occasions. The ZL Data News is also posted on the NZART Web Pages. <http://www.nzart.org.nz/nzart/digital/>

DX PACKET CLUSTER

The DX PacketCluster is a Packet BBS provided especially for DX operators. While it has the normal bulletins and mail facilities normally associated with a Packet BBS, it also has many other features of interest to DX operators.

For example, if anyone logged onto the DX PacketCluster hears some interesting DX, this "DX spot" can be put up on the Cluster for the benefit of any others who may be logged on. Others will see the DX spot in real time, and if interested can tune up and work the DX station. This is the prime purpose of the DX PacketCluster.

There are also other features such as WWW sunspot information which can be put up, a list of current DXCC countries with prefixes, head-

ings and distances from your QTH, and sunrise and sunset information for each country.

Various DX bulletins are put up on the Clusters from time to time.

The following is information for those interested in connecting to a DX PacketCluster:

ZL1BN Auckland

Access through the Klondyke node, 1200 baud on 145.625 with negative split, or 9600 baud on 438.350 MHz with negative split.

ZL1HY-10 Walton

Access through the Klondyke node, 1200 baud on 145.625 with negative split, or 9600 baud on 438.350 MHz with negative split, or

on the local port 144.725 MHz simplex.

ZL2NX Martinborough

Access through 6625 Wellington Data repeater, 7075 Wellington 2400 baud repeater, 5725 Manawatu Data repeater, 860 Mt Climie 70 cm Data repeater, 5425 Mt Climie, 144.6 local port, 7035.5 kHz HF 300 baud Packet access.

ZL3DXC Christchurch

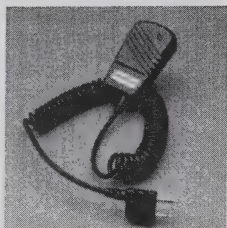
Access through 144.650.

The ZL1BN and ZL1HY-10 Clusters are linked through the Klondyke node. These two are linked to ZL2NX through ZL2AQY at Stratford, however, the link is somewhat tenuous because of propagation

variations on 2 m. It is hoped that this link will be made more reliable in the near future, and that a link can be provided to ZL3DXC. Efforts will also be made to extend the network further, depending on the availability of resources.

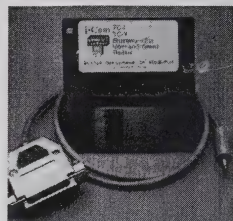
If you are keen on DX on any band, including VHF and UHF, then the DX PacketCluster is for you. Even if you have no experience at Packet, you will benefit from connecting to a Cluster, and staying connected while you are tuning the band—you will even be able to put up spots yourself for the benefit of others.

Further information is available from the sysops, Murray ZL1CN, Mike ZL1HY, Chris ZL2DX and Graham ZL3NZ.



HamWare

Electronic Kits, Hardware, Software
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Electronic and Radio kits

- VHF/UHF Transceivers
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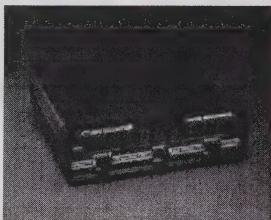
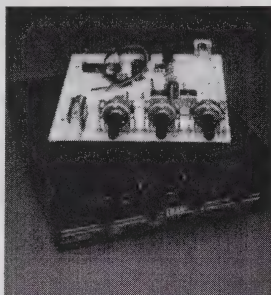
- Frequency Counters
- Signal Generators

Accessories and Interfaces

- DSP Audio Filter
- Computer Interface

Packet Equipment

- TNCs
- Modems

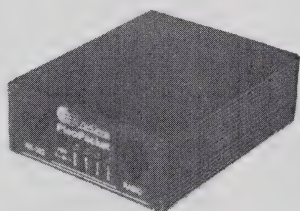
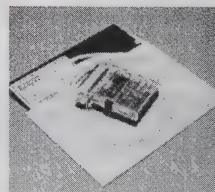
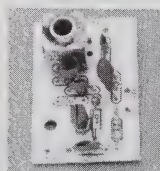


- QRP Transmitters
- HF Receivers
- 20M Transceiver

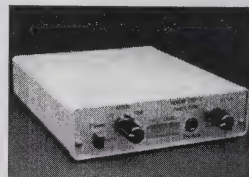
- RF Service Monitor
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- Networking Components
- Software



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Awards

Award Notes

When applying for an award, whether through NZART or through an overseas Society, courtesy demands that you observe the following: (1) PRINT your name, address and call-sign; (2) Clearly state what award (and endorsements) you are applying for; (3) Supply checking sheet with call-signs, dates of QSOs, mode, etc.; (4) Enclose required funds (currency/IRC/stamps) as requested.

For NZART Awards

1. The usually accepted rules apply to all NZART awards.
2. NZART stresses the HONOUR SYSTEM. Awards applicants need NOT hold QSL cards for claimed contacts. It is sufficient to merely certify that the QSO was legitimately made. This no QSL rule applies ONLY to NZART sponsored awards.
3. Endorsements for mode/time/location etc., made at applicant's request.
4. Applicants for awards please note—cost of awards as listed does not include postage. Please ensure that this postage is enclosed with applications.
5. Stamps or currency from any country accepted instead of IRC but cheques NOT desirable.
6. Post applications to Awards Manager.

APPLICATION FORMS suitable for most awards are available from NZART Awards Manager, PO Box 108, Gisborne 3815, New Zealand (SASE Please).

COST OF AWARDS. NB—Cost given for awards are those for ZL applicants. Overseas applicants pay \$2.00 for each NZART award except WAP (\$3.00) and 5x5 (\$3.00) or where reciprocal arrangements have been made. Airmail postage is \$1.00 extra.

For Branch Awards

- Logs need not be verified unless stated.
- All awards are open to shortwave listeners unless stated.
- The honour system also applies to Branch awards.

ENZART

A prestige award to honour NZART

1. In three parts—(A) Basic award requires 200 points with endorsements for 250, 300, 350 points. (B) Honour award requires 400 points with endorsements for each additional 50 points. (C) HONOUR PLAQUE for 500 points.

2. Points earned as follows by contacting an NZART member who is on the voting roll of the Branch concerned—Phone QSO, 1; CW QSO, 2; Club Station QSO, 2; YL op. QSO, 1; UHF, VHF QSO, 1; Mobile QSO, 1; AMSAT QSO, 1; Branch President QSO, 1.

3. It is essential to clearly determine that the operator contacted is a financial member of NZART and on the voting roll of the Branch concerned.

4. Contacts claimed with a Branch Station must be from a Clubroom or other permanent headquarters, or alternatively when the station is being operated in a contest, from an exhibition, or other activity of a similar kind. Contacts as a result of call-sign "swapping" at a member's QTH are not eligible.

5. Contacts with mobiles are eligible only when the mobile station is within 30 miles of his Branch's Clubrooms or his own QTH. (Note rule 3 above.)

6. One station may be claimed in several categories—e.g. the Branch President can be claimed for both Phone and for CW as well as for Branch President—but EACH claimed must be for a separate con-

tact, and the contacts must be not less than 24 hours apart.

7. Contacts must be "Phone to Phone" or "CW to CW".

8. "Club Net" contacts are not eligible until the net concludes, while contacts made in an organized "awards net" with MC etc., are not eligible.

9. Permanent changes of QTH by claimant are permitted and likewise contacts made during genuine temporary operation.

10. ZL applicants must be members of NZART and all applicants must certify that each contact made fulfils award requirements. No QSL card need be held or submitted but applications must be made on special Check List—cost 10 cents plus SASE (large). Contacts must date 1-11-76 or later.

11. Each certificate costs \$1.00. Endorsements free but SASE required.

12. Applications to NZART Awards Manager.

WAP—"Worked All Pacific"

Contacts required with 30 different "Oceania Countries".

Eligible countries... Any Oceania country, i.e. eligible as Oceania for WAC. (See DXCC list.) Cost \$2.00.

Five Band WAP

Contact any 30 eligible Pacific Countries (as counting for Oceania for WAC), each on FIVE different bands making a total of 150. Send list of log extracts (QSLs not

required to be held) to Awards Manager ... with \$8.00. AWARD: Wooden Shield surmounted with NZART badge and suitably inscribed. (Extra overseas postage for AIRMAIL—\$2.00.)

Antipodes Award

All round Achievement recognized as:

1. Technical

- (a) Stations of claimant (receiver, transmitter, antenna) to be home built, to be completely of amateur design and construction which the operator has personally developed and constructed;
- (b) Commercially constructed equipment or kits from any source are not eligible.

2. Operating

Three QSOs to be made with stations (these stations NOT required to meet above requirements) in the general "antipodes continental area" of the claimant—(e.g. ZL to Europe).

Applications to NZART Awards Manager with \$1.00 with certification that rules have been observed. (Award suggested by ZL2AMJ.)

NZ—New Zealand Award

Available to all radio amateurs other than ZL.

Requirements:

- 35 contacts with ZL1.
- plus 35 contacts with ZL2.
- plus 20 contacts with ZL3.
- plus 10 contacts with ZL4
- plus 1 contact with ZL "territory"—either from NZ Antarctica,

Chatham Islands, Kermadec Islands, or Campbell Island. This one contact may be substituted by 20 ordinary ZL contacts if desired.

This makes a minimum of 101 contacts which should be dated from December 8, 1945. (Cost \$1.00).

NZC—New Zealand Counties

Basic award required contacts with 20 different New Zealand Counties. Endorsements for 40, 60, 80, 100 are made with a special certificate for 112. Map showing counties is depicted elsewhere, while checking sheet is available from NZART (see below).

1. Initial certificate with any or all endorsements to 100 costs \$1.00.
2. Separate endorsements to 100, after issue of basic award, costs 20 cents for any group—or 1 IRC. Plus SASE.

3. Special Certificate for "NZC 112" costs \$1.00

4. Checking sheets which MUST be used and which are returned to applicant for record purposes cost 20 cents (1 IRC).

5. NZC "224"—the "224" Shield was instituted to recognize very outstanding achievement—that of "double 112" with different stations contacted in the relevant counties for each NZC 112. Current cost is \$11.00. Applicants for NZC 224 must first hold TWO NZC 112 Awards.

6. The operator on a "County DXpedition" whether Mobile or Fixed Portable may claim that County for his own NZC credit.

7. The original "Counties List" will be maintained irrespective of deletions or additions. The criteria will be the actual area of operation which must be determined by the honour of the operator.

8. Overseas applicants—extra \$2.00 for postage on "224" plaque.

"ZLA" Award

Contacts required with Auckland City, Wellington City, Christchurch City, Dunedin City, Antarctica ZL5, Campbell Island, Chatham Island, Kermadec Island. Applicants must send certified list to NZART Awards Manager with \$1.00 or stamps from country of applicant. Specially produced certificate.

WAZL—"Worked All New Zealand"

Contacts required for 45 different Branches of NZART—EXCEPT FOR OVERSEAS APPLICANTS (for whom only 35 are required). Special endorsement when WAZL completed within 12 month period. NB: Mobiles operating outside their own Branch Area must use the Branch Number of the area in which they are operating (for WAZL credit). Cost \$1.00.

NZART Branches for WAZL—See Branch Directory on pages 12-16.

VHFCC—VHF Century Club

One hundred points required from QSOs with ZL stations on the following basis:

50 MHz band contacts count 1 point.

144 MHz band contacts count 3 points.

432 MHz band contacts count 6 points.

(Further bands may be added in the future).

The same station may be claimed once on any one band but may be claimed repeatedly on different bands.

Endorsement stickers available for 200, 300, 400, 500 points. (Cost \$1.00).

WAD—A VHF Award

Contacts required on any VHF band (or mixture of VHF bands) with ZL1, ZL2, ZL3, ZL4—One contact per Call Area. Cost—\$1.00. Endorsements for Satellite QSOs.

"5×5"—Five by Five

This Premier Award has been instituted to recognize the increasing interest in Five Band DX operation. The initial award requires that the same station be contacted on five bands repeated with five different DXCC countries. First endorsement after a further five has been contacted (total of 10) with the 20 endorsement requiring another ten and so on to 100. Certified list with

full QSO data and fee of \$2.00 which includes all endorsements. Certificate is outstanding and is overprinted in embossed gold. Contacts must date from 1945. Applications to NZART Awards Manager.

NZLA—New Zealand Lakeside Award

1. For Basic Award, contacts are required with stations operating on the shores of TEN (10) freshwater lakes in New Zealand. Endorsements for each additional ten lakes up to 40; Honour Award for 50 lakes with further endorsement for each additional ten.

2. Stations must be located within ONE kilometre of the water or in a town on the lake shore.

3. Full rules are with the Check Sheets which MUST be used when applying for NZLA—these cost 20 cents plus SASE (large).

4. Basic Award costs \$1.00, and large SASE for any endorsement; Honour Award is \$1.00 and SASE for any endorsement.

5. Check Sheets from NZART Awards Manager to whom all applications must be directed.

6. Eligible contacts must date May 1, 1976 or later.

NOTE: Check Sheets are returned to applicant and make up a complete record of lakes credited towards award. Basic work for this award was done for NZART by Mike Groth ZL1AHF.

CJC

Captain James Cook Award

To perpetuate the memory of this world famous navigator and seaman—in three classes: Basic "Sailor Class" requires contacts with—G in Yorkshire; FO8; ZL2; VK2; KH6 ... For "Officers Class"—"Sailor Class" contacts as well as ZL1, ZL3, ZL4, VK3, VK4, New Guinea, and any Antarctic station ... For "Command Class", as for "Officer Class" as well as any five of the following—VE2, VO, A35, YJ8, FK8, CE8, KL7.

Certified list (confirmations not required) with \$1.00 to NZART Awards Manager.

Tiki Award

Work five different ZLs each on FIVE different bands dated post-war. Cost \$1.00.

ZL1 Award

Basic Award requires contacts with 125 different ZL1 stations dating post-war. Endorsements 175 and 250.

ZL2 Award

Basic Award requires contacts with 100 different ZL2 stations dating post-war. Endorsements for 150 and 200.

ZL3 Award

Basic Award requires contacts with 50 different ZL3 stations dating post-war. Endorsements for 75 and 100.

ZL4 Award

Basic Award requires contact with 25 different ZL4 stations dating post-war. Endorsements for 35 and 50.

Note: cost of ZL1/2/3/4 Certificates is \$1.00 each with any endorsements. Further endorsements will cost 10 cents or 1 IRC UNLESS a new certificate is required instead of "sticker", in which case the cost is 40 cents. On issue, certificates will be endorsed for band/mode as requested and for any yearly period of time (January through December). Such endorsements are of course available to applicants at any time after the initial award has been made. ZL or ZM combination is OK. Applications with list to NZART Awards Manager.

MIA

Minor Islands Award

For contacts with minor islands of the New Zealand coast—e.g. Kapiti Island, Portland Island, Great Barrier Island, Little Barrier Island, Waiheke Island, D'Urville Island, Rangitoto Island, Kawau Island, Motutapu Island, etc., from which FIVE contacts are required. Certified list with \$1.00 to NZART Awards Manager.

NB: So-called "Islands" in Auckland area which are connected to mainland by a causeway are not eligible.

NZ Armed Services Award

This award is presented by the Counties Awards Net to remember all amateur radio operators who have served their country.

This award is open to all amateurs and SWLs.

All contacts made after August 1, 1992 will be eligible for this award.

All Amateur bands and modes may be used.

Repeater contacts accepted.

A station may only be contacted once.

Only one service number may be used.

ZL stations to work 100 contacts. VK stations to work 50 contacts. DX stations to work 30 contacts.

Information required: Log data, Service Number, Service in which served (ie, (A) Army, (AF) Air Force, (N) Navy.

Cost of Award: \$2.00 plus postage.

Custodian: NZART Awards Manager.

Check sheet and rules also available from Awards Manager with SASE.

Provision for Award Update if required.

IARU Region III Operating Awards

To publicise Region III

1. The award is available to licensed amateurs and SWLs.

2. Contacts made after April 5, 1982 are eligible.

3. QSL cards NOT required. Send certified list of eligible contacts from Log Book.

4. Cost is \$1.00 (surface) \$2.00 (airmail) for postage charges only.

5. Eligible countries are those in Region III whose amateur societies are members of IARU Region III Association. These are: Australia, Bangladesh, Brunei, China (PRC), Fiji, French Polynesia (FO8 only), Hong Kong, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Pakistan, Papua New Guinea, Philippines, Singapore, Solomon Islands, Sri Lanka, Thailand, Tonga, Vanuatu.

PLUS: ONE Country credit from US Territories in the Pacific from Guam, Northern Marianas, American Samoa, Wake Island, Baker Howland Group, as presented by ARRL. ONE Country credit from Pitcairn Island (VR6), Chagos Archipelago (VQ9), represented by RSGB. Current total of available "countries" is 24. Requirements for Award as from January 1 1986: Basic, 7 areas; Silver Endorsement, 15 areas; Gold Endorsement, 20 areas. These to be reviewed as considered necessary by the custodian who would recommend appropriately to the Secretariat.

6. Awards may be endorsed for any mode or band.

7. Applications to NZART Awards Manager, PO Box 108, Gisborne, New Zealand.

National Parks Award

1. For contacts made with stations operating WITHIN boundaries of a New Zealand National Park.

2. Basic award requires TWO contacts.

3. Usual NZART awards rules apply.

4. Endorsement: for each extra two contacts; for VHF Simplex; for VHF via repeater; for each amateur band; etc.

5. Duplicate Contacts (with SAME station) permitted ...

★ on different amateur bands
★ on different days
★ from different Parks.

6. Eligible contacts to date from January 1, 1988.

7. Applications with \$2.00 to NZART Awards Manager.

Discovery Award

A certificate from NZART presented to young people in youth organizations such as Guides, Scouts, Brigades, etc, in recognition of the following achievements in the world of Radio Communications:

1. Having heard, identified and logged three separate two-way Amateur Radio transmissions on different dates;
2. Having heard and identified at least one New Zealand Shortwave Broadcasting Station;
3. Having heard and identified at least two overseas Shortwave Broadcast Stations;
4. Producing three QSL cards (or other appropriate verification) confirming three of these items.

This award aims to stimulate and encourage an awareness of the wonderful world of radio as young people "DISCOVER" some aspects of the hobby. It is free upon written application and proof to the custodian:

Discovery Award
C/- Allen Little ZL2GB
7 Earl Street
Levin 5500

NZART Branch Awards

Alexandra Blossom Festival Award

The award is to be held by the Central Otago Club (Branch 61) in September each year to coincide with the local festivities. The award certificate partly consists of scenes from the festival. The award is on any band, and is available to all amateurs. Cost \$5.00. Five contacts required by ZLs, three from overseas, to Branch 61 stations. All correspondence to Club Secretary. Details published in Break-In each year.

Aotearoa Postcode Award

This award has been presented to stimulate awareness and the use of postcodes in the New Zealand postal system—at least by the amateur fraternity. To some extent it is a sister award to the Australian Amateur Radio Postcode Club. At the present time there are 613 postcodes in use, so the upgrades will not come easy. Best of luck.

1. The award is open to all Amateurs and SWLs.

2. All contacts made on or after October 20, 1991, will be eligible for the award.

3. A certificate will be issued for basic qualification, and stickers for the various following upgrades.

4. Portable and mobile stations must give the postcode for the par-

ticular area they are in and can claim that postcode for the award.

5. **Basic Award:** Make contact with ZL stations and obtain their QTH and Postcode. Then use the suffix letters of the station claimed to complete the following phrase—AOTEAROA LAND OF THE LONG WHITE CLOUD.

Each letter of a call-sign may only be used once unless that station is contacted in a different postcode area. Claim each postcode once only.

6. Upgrades: Stickers will be issued as follows: Postie—100 different postcodes; Mail Officer—150 different postcodes; Supervisor—200 different postcodes; Branch Manager—250 different postcodes. (There is provision for an extension for the enthusiast.)

7. All amateur modes and bands may be used. Repeater contacts accepted.

8. Cost: Basic certificate—
ZL stations \$3.00
VK stations US\$2.00
DX stations US\$3.00

Upgrades—

ZL stations SASE plus \$1.00 for first—SASE for other three.

VK Stations SASE plus \$1.00 stamp for each upgrade.

DX stations SAE plus US\$1.00 for each upgrade.

9. A copy of your log is to be submitted upon application for the awards and sent to: Awards Manager, 48 Leslie Street, Waitara 4656, New Zealand.

Bay of Plenty Awards

Sponsored by the Tauranga Branch 39 of NZART. For working stations in the Bay of Plenty region—viz, Opotiki, Rotorua, Taupo, Tauranga and Whakatane Districts and all cities and districts within this region.

ZLs need: either 10 stations on any band or five stations on VHF bands.

The Rest of the World need: five stations on any band.

This award is available to listening stations on a "heard" basis.

Note: ZL1BNW is an instant qualifier. Costs: \$4.00.

Applications with check list, showing station, date worked, mode and band (QSLs not required) to John V. Collin ZL1BNW, 65 Paine Street, Judea, Tauranga 3001, New Zealand.

Christchurch Award

Requirements: Christchurch amateurs 25 different stations; rest of ZL—15 stations; VK—10 stations; rest of world—5 stations. Cost: ZL and VK NZ\$5.00; others US\$4.00 or equal. Applications to Awards Manager, Box 1733, Christchurch.

The Christchurch Branch 05 Brasspounders Club Award

The aim of this award is to promote Morse technique in a friendly competitive way and to encourage conversational CW between fellow amateur radio enthusiasts.

A Certificate of Accomplishment will be issued by the Christchurch Branch Awards Manager when suitable evidence shows that the applicant has gained the appropriate points total.

For the "INITIAL AWARD" (25 points minimum) the following QSO types are acceptable.

1. CW QSO with Christchurch Branch 05 NZART Club member—1 point.

2. CW QSO with Christchurch Branch 05 NZART "Brasspounders" Club member—2 points

3. CW QSO with Christchurch Branch 05 NZART "Brasspounders" Club member via ZL3AC Club Station—4 points

Bonus points may be added to each of the above according to the following criteria:

4. If the QSO was conducted throughout using a STRAIGHT key, claim 2 bonus points.

5. If the QSO was conducted throughout using an ELECTRONIC keyer or SEMI-AUTOMATIC key (bug type) claim 1 bonus point.

A QSO conducted with COMPUTER Morse will not be eligible for a bonus.

Type "3" QSOs if multiple, must be spaced at least 24 hours.

To qualify for the "Initial Award" applicants must include one only type "3" QSO on their log sheet.

Award Par Excellente

(60 points minimum)

For "AWARD PAR EXCELLENTE", New Zealand "Home Stations" must include at least two type "1" QSOs, and their is no points limit on type "5" contacts. Where the same station is being claimed more than once, there must be at least 24 hours separation between the QSOs.

Overseas stations need only one type "1" QSO for their "Award Par Excellente" included with their claim, and may claim 2 points for each "ZL" QSO together with one extra bonus point if the "ZL" is a "Branch 05 member". At least 24 hours must separate QSOs where the same station is being claimed more than once.

Rules

Frequencies: All Amateur Band CW frequencies may be used.

Who: All Radio Amateurs.

Claims: Log extracts showing date, time on/time off, signal reports, other operator's call and QTH.

Check: Log extracts shall be countersigned by one other similarly licenced amateur operator.

Duration: Contacts claimed shall have been of at least one-quarter hour (15 minute) duration.

Signals: No claims will be accepted with reports of T7 or lower.

When: Only QSOs commenced after the inauguration are acceptable. Inauguration date is February 1, 1993. There is no closing date for claims unless the award termination is promulgated.

Points: Points claimed for "INITIAL AWARD" may not be used for the "AWARD PAR EXCELLENTE".

Costs: NZ\$4.00 Initial Award. Award Par Excellente cost will be published as soon as possible.

The Club Station ZL3AC will be on the air on Mondays and Wednesdays from 0730(FC) (1930 NZST) and on Tuesdays on an occasional basis. Brasspounder Club members will be operating and provision will be made for Novice operators. Operating frequency on 3.5 MHz will be 3.620 MHz and the CW sector of 14 MHz depending on conditions.

Address all claims to "Awards Manager", PO Box 1733, Christchurch, New Zealand.

City of Dunedin Award

Otago Branch 30 promotes this award which features colour photographs of Albatrosses in the colony on the Otago Peninsula, the lighthouse at Tairua Heads, and a view of Dunedin City from Stuart Street.

Contacts since July 1 1986 eligible and the required 10 points for ZL applications (five point DX) may be accumulated from the following allocations:

ZL4AA Branch station	3 points
Branch 30 President	2 points
Branch Life Member	2 points
Branch YL	2 points
Other Branch members	1 point

Award is open to SWLs.

NO repeater contacts and each station can be worked ONCE only. Any one band/mode or a combination of any bands/modes may be used.

Cost—NZ\$2.50 with application to Awards Manager
PO Box 5485
Dunedin 9015.

Fiordland National Park Award

Requirements: Contact four separate stations/operators in or within one kilometre of the Fiordland National Park, plus two contacts with Branch 08 members. Total—six

contacts. Send log (no certifying required) with \$1.50 (stamps OK) to George McKenzie ZL4JP, Waiparu, No. 7 RD, Gore 9700.

Gisborne Award

Requirements: Contacts after January 1 1969, as follows: Gisborne amateurs—ten different stations. ZL—four stations. Rest of world—two stations.

Cost: \$2.00 apply to NZART PO Box 108, Gisborne.

Golden Shears Award

This award is currently under revision. Details, when available, will be published in *Break-In*.

HF and SWL

1. Net contacts are eligible.
2. Points required: ZL—10 points; VK—7 points; DX—5 points.

VHF/UHF

1. Repeater QSO eligible.
2. Net contacts on repeater NOT eligible.

3. Points required: ZL2 call-sign area—15 points; rest ZL—7 points; VK and DX—3 points.

General

- 1 Any band/mode or combination (except crossband).

2. ONE contact per member UNLESS member is operating club station or mobile within the Wairarapa.

3. No QSLs required. Give FULL QSO data.

4. Application with NZ\$3.00 or equivalent international money order to Awards Manager, PO Box 860, Masterton.

5. Points System: for contacts as follows:

- (a) Branch 46 member—1 point
- (b) Club Station ZL20A—2 points
- (c) YL operator—2 points
- (d) Farming branch member—2 points
- (e) Mobile contact within the Wairarapa—2 points

Horowhenua Branch 16 Award

Replaces existing award which ceased on March 31, 1995.

The new award will be a short-term award to be held October 1-31 each year to celebrate the formation of the Branch in 1948.

This award may be worked on all bands, all modes and is available to all Amateurs and SWLs in New Zealand and overseas.

Stations may be worked on different bands. All contacts to be with financial members of Branch 16. ZL2DS is a compulsory contact. Ten contacts required by ZLs. Five from overseas.

Cost: \$5.00. Logs to Award Manager: Gwen Leslie, 4 Reeve Street, Foxton 5551.

Hutt Valley Award

One point for contacts dating after March 1 1976, with members of Branch 18. Any band/mode but no repeater contacts eligible; two points for any YL contact; two points for contact with club station ZL2HV and two extra points if applicant uses equipment operated by power generated on the site from natural sources (wind, solar, water, etc.). ZLs require total of ten points; overseas stations five points.

Endorsements for additional five points and merit for single band operation or when all contacts are on CW. Applications with details of equipment used, etc., and fee of \$5.00 to Awards Manager, Box 30-519, Lower Hutt, New Zealand.

Kapiti

1. Ten points required on any band—including VHF-UHF and repeater contacts. Different stations are required.

2. One point for any permanent member in the district.

3. Two points for any branch member.

4. Three points for any committee member.

5. Four points for ZL2KB.

6. Net contacts are permitted, except the Branch net.

7. A listeners' award is available. Recording of sufficient two-way contacts worth 10 points.

8. Packet contacts attract two points each for Kapiti Branch member worked direct.

9. Double points for CW contacts, excluding Field Days.

10. No two contacts with the same station are permitted.

11. Price \$3.00 per certificate.

12. Enquiries to Award Manager, Haydn Sherley ZL2AWI, PO Box 166, Paraparaumu, New Zealand.

Manawatu Award

For overseas stations working FIVE stations who are members of Manawatu Branch 20. Certified list and \$3.00 or five IRCs to ZL2AFT, 429 Albert Street, Palmerston North.

Marlborough Wine and Food Festival Award

This award, arranged by Branch 22 to coincide with the Marlborough Wine and Food Festival Award held each year in the month of February. The festival celebrates the beginning of the grape harvest and the rich diversity of vineyard, orchard, pasture and ocean products that go to make Marlborough the "Gourmet Province". Participants in the award will receive an attractive certificate carrying the special event call-sign ZL6MWF.

Award Rules

1. Certificate will be sent to ZL stations presenting Log Sheets claiming 20 points, including one (only) contact with ZL6MWF and enclosing \$5.00 to cover printing and postage.

2. Certificates will be sent to overseas stations presenting Log Sheets claiming 10 points, including one (only) contact with ZL6MWF and enclosing \$5.00 (New Zealand equivalent) (not postal coupons) to cover printing and postage.

3. Log Sheets must show date, call-sign, signal report, Branch 22 operator's name, points claimed.

4. All applications for the award must be made in writing to: The Award Secretary, Branch 22 NZART, PO Box 432, Blenheim 7315, New Zealand.

Points

Six points for working ZL6MWF (compulsory).

Three points for working ZL2KS (Club Station).

Two points for working any member of Branch 22.

ZL6MWF will only be counted once. Other stations including the Club Station ZL2KS may not be worked more than once on any particular day but may be worked on different days.

Times and Frequencies

ZL6MWF and ZL2KS may appear on any band at any time but will be active exclusively on 80m around 3.566 MHz $\pm$ between 2000 hours and 2100 hours each evening during the award period.

Members of Branch 22 involved in giving out points will advertise the fact by adding the words "for Branch 22 Award" in their normal call and may also appear on any band at any time.

Details published in *Break-In* each year.

Nelson Mobile Award

Points system with several alternate methods of obtaining the award for both mobile stations and fixed stations.

1. Mobile to Fixed, 100 points required. (Must include two Branch 26 contacts.)

2. Mobile to Mobile, 50 points required. (Must include one Branch 26 contact.)

3. Fixed to Mobile, 100 points required. (Must include one Branch 26 contact.)

4. Worked Mobile in 40 New Zealand Counties. (Must include one from Waimea.)

5. Worked Mobile from 35 New Zealand Counties. (Must include one from Branch 26.)

6. Mobile station to work 35 prefixes.

One point for contact in own radio district, two points in adjacent district and three points in alternative district or DX.

First two Branch 26 contacts count four points each.

Duplicate contacts not allowed except in County section.

QSLs not required. Two Amateurs should verify the log submitted.

Refer to full details in July 1969 Break-In. CHC rules apply. \$1.00 to A. W. Lyford, 8 Roto Street, Tahunaui, Nelson 7001. Additional endorsements 25 cents.

Papakura Radio Club "21" Award

For contacts with 20 members of Papakura Radio Club PLUS ZL1VK dating from 1-1-77. Band/mode endorsements; certificates not numbered; cost \$2.00. Apply to Miss C. Johnson, ZL1AJL, PO Box 397, Papakura.

Reefton-Buller Award

Basic Award requires contact with any five Branch members; Merit Award requires, in addition to Basic, that ZLs contact—one Branch 62 Mobile, one XYL and the Club Station ZL3WP; while overseas stations contact any of those mentioned. Special merit for contacts made in 1973 between October 1 and December 31. No QSLs required. Send certified list with \$5.00 to NZART Awards Manager. List of members, etc., available from Branch 62 Secretary.

"Rhododendron Festival" Award

This award is to be held by the combined clubs of Taranaki on or about November each year to coincide with the local Rhododendron Festival. The Award Certificate will be one of a series of coloured, hand painted prints of named Rhododendron varieties by the well-known Taranaki artist, Janet Marshall.

The Award is on all bands, modes, etc. and is available to all amateurs and SWLs both in New Zealand and overseas.

Details as published in *Break-In* each year.

Rotorua Amateur Radio Club Inc.

Maidenhead Locator Award Rules

1. The name of this award is the Maidenhead RF81 Rotorua Award—in short, The RF81 Award.

2. The Award is the responsibility of Branch 33, Rotorua, NZART.

3. The Award is for contacts into 98 Sub-squares and two contacts with the Club Station ZL1ROT.

4. A certificate will be issued upon completion of contacts into five Sub-squares plus one contact with the Club Station ZL1ROT.

5. Four Endorsements will be

issued as the number of Sub-squares contacted reach 25, 50, 75, and 98. They will be known as the Geyser, Redwood, Lakeland, and Mountain Endorsements respectively. The final Endorsement requires a further contact with Club Station ZL1ROT, making a total of 100 contacts for the full award.

6. Contacts may be made on any Amateur band by any mode.

7. Operators working from a Sub-Square may claim that Sub-Square for their own Award.

8. Operators may be contacted before or after the Club Net (see *Call Book*) on 147.350MHz. They will also operate on the Awards Net and other frequencies.

9. The masterplan of Sub-Squares will be held by the Award Manager. Copies, together with the Award Rules, will be circulated to the Award Net Controllers. A copy will also be supplied with the Certificate to assist operators to complete the Award.

10. The Sub-Squares identification are:

AL to GL, AM to GM, AN to GN, AO to GO, AP to GP, AQ to GQ, AR to GR, AS to GS, AT to GT, AU to GU, AV to GV, AW to GW, AX to GX, and AA to GA.

11. Claims for Awards are required to show: date, station contacted, band and Sub-Squares worked. SWLs are to quote both stations making contact and only one Sub-Square is to be claimed from each contact logged.

12. The Award will commence on March 25, 1988.

13. The cost of the Award is \$4.00.

14. Endorsements will be forwarded without further charge on receipt of SASE with claim.

15. Claims for this Award and subsequent Endorsements are to be addressed to: The Award Manager, Rotorua Amateur Radio Club Inc, PO Box 1766, Rotorua 3215, New Zealand.

16. This issue of the Rules of the RF81 Award is effective from January 1 1994.

Southern Hawkes Bay Award

Points are gained by contacting Branch 06 members. No Nets except the Awards Net. Starts August 1, 1985. All modes all frequencies.

VHF or UHF repeaters—1 point; VHF Simplex, SSB or CW—2 points; HF Phone—1 point; HF CW, RTTY or Satellites—2 points; YL operator—3 points; Southern Hawkes Bay Vintage Radio Club ZL2CF—2 points; Hawkes Bay Club Station ZL2IB—2 points.

Shortwave listeners: log date, time, mode and both call-signs.

ZL require 10 points. Overseas stations require 5 points.

Proficiency Award: Work four modes for a total of 40 points.

Note: Same station on different bands or different modes same day is a new contact. Same station on different day is also a new contact.

Endorsement for single modes. Copy of log and \$6.00 to be sent to R. Allison ZL2BRU, 8 Edinburgh Street, Dannevirke, New Zealand.

Taranaki Award

This Award started July 1 1994.

Basic Award for working 25 different Taranaki stations.

Endorsements are available for 50 and 100 contacts. Endorsement available on request for specific modes or bands.

School call-signs, special call-signs and Club call-signs also count.

Each station may be claimed once only.

Contacts must be made on different days to those claimed for other Taranaki Awards.

Cost of Basic Award—\$5.00 and an SASE for Endorsements

Send application to:
Alistair Herbert ZL2WOW
Mataro Road
RD 45, Urenui 4655.

Taupo Branch 60 Award

Object of the Award

To promote the Taupo area and good radio operating procedures among all Amateur Radio operators.

Rules

1. 20 points required for ZL and VK stations.

10 points required for DX stations. Shortwave listeners, log details of 10 contacts.

Points:

Phone: Branch Station
ZL1BCO = 5 points

President = 3 points
Members = 1 point

CW: Branch Station
ZL1BCO = 6 points

President = 4 points
Members = 2 points

VHF/UHF repeater contacts score as per Phone and VHF/UHF simplex or CW contacts score as per CW.

2. Contacts may be any mode or band, but must not be mixed—ie, VHF to VHF; HF to HF, etc.

3. The Branch Station (ZL1BCO) is a compulsory station but may be contacted twice provided the second contact is in a different mode or band and at least 24 hours has elapsed between contacts.

The Branch Station must be operated from the Clubrooms not call-sign swapping at a member's QTH.

4. All members may be contacted once on CW and once on Phone as per rule 3 above.

5. Contacts to date from May 1, 1993.

6. Full log details and \$5.00, no QSLs required, to:

The Award Secretary
Taupo Branch 60 NZART
C/- John Head ZL1CJH
13 Simkin Street
Taupo 2730.

Taupo Branch 60 Regions Award

Object

To make contact with Mobile, Portable and Home stations located in the areas described below.

Stations to be located no further than 1 km from:

- Area 1 AC Baths and Reserve
- 2 Taupo Industrial
- 3 Botanical Reserve
- 4 Taupo Central
- 5 Taupo Boat Harbour
- 6 Rainbow Point
- 7 Taupo Airport
- 8 Wharewaka Point
- 9 Five Mile Bay
- 10 De Brett Thermal Pools
- 11 Bonshaw Park
- 12 Waitahanui
- 13 Hatepe Village
- 14 Motutere Camping Ground
- 15 Mission Bay
- 16 Tauranga-Taupo
- 17 Motuoa
- 18 Hautu
- 19 Turangi
- 20 Rangipo
- 21 Tongariro National Park
- 22 Rangipo Power Station
- 23 Pihanga Scenic Reserve
- 24 Tokaanu Power Station
- 25 Tokaanu Village
- 26 Waihi Village
- 27 Pukawa Village
- 28 Omori Village/Kurutau Hydro
- 29 Waihaha River
- 30 Tihori
- 31 Pureora Forest Park
- 32 Marotiri School
- 33 Kinloch
- 34 Oruanui
- 35 Huka Historic Village
- 36 Huka Falls
- 37 Wairakei Power Station
- 38 Aratitua Rapids/Station
- 39 Ohaaki Power Station
- 40 Orakei Korako Thermal Area
- 41 Lake Rotokawa
- 42 Taupo Race Course
- 43 Fletchers Mill
- 44 Craters of the Moon
- 45 Nukuhau
- 46 Acacia Bay
- 47 Oppe Scenic Reserve
- 48 Kaimanawa Forest Park
- 49 60/8 Weighbridge
- 50 Waipunga Falls

Rules

1. Contacts may be any band, any mode or mixed.

2. Any licensed Amateur may be contacted for these areas, and may claim same areas for their own award application.

3. Twenty areas required for basic award with upgrades for every 10 areas thereafter.

4. The same station may be contacted as many times as you wish and several contacts on the same day are allowable.

5. Work all regions twice with different operators for the Taupo Regions Century Award.

6. Contacts to date from May 1, 1993.

Send SASE for checking sheets to:

John Head ZL1CJH
13 Simkin Street
Taupo 2780

Basic award cost \$5.00. Upgrades free on receipt of an SASE.

The Rosetown of New Zealand "Grand Award"

This Award, available in two levels, BASIC ADDICT, is workable world-wide by any Amateur Radio Operator or SWL.

Any mode, any amateur frequency, mixed band usage permitted, and repeater contacts are not barred. Net operation is also permissible.

The object is to contact Grandparent operators, and claim points according to the list given below.

All applicants must be licensed amateur radio operators and their station must be operated in accordance with the Radio Regulations, plus the terms and rules of their own administration. Good operating manners and techniques will be encouraged and only one QSO per call-sign is permitted over the two levels.

Points may be claimed as follows:

A QSO with a Grandparent earns 10 points

who is also a Great-Grandparent earns another 10 points

who is also a Great-Great-Grandparent earns another 20 points

and should there be a Great-Great-Great-Grandparent another 100 points

and each Grandchild, Great-Grandchild, etc, earns 1 point

(For example, two Grandchildren, one Great-Grandchild and two Great-Great-Grandchildren = 5 points plus 40 = 45 sub-total for that QSO.)

The sub-total so claimed, is to be doubled if the operator contacted is a member of the National Radio Society of the country worked: ie, NZART, WIA, ARRL, etc.

The BASIC AWARD of 1000 points (QSL size) \$3.00.

The ADDICT AWARD of 10,000 points (304mmx203mm) \$7.00.

Basic points can be credited towards the Addict.

Each Award is a beautiful photograph of a rose, and being laminated makes an ideal wall hanging or table placemat. The Award dates from January 1, 1992.

For Log Sheet and Rules, an SASE (or IC) to: Awards Manager, Te Awamutu ARC, NZART Branch 40, PO Box 583, Te Awamutu 2400, New Zealand.

(There is no copyright on photocopying the log or rules.) Applications for the Award to be forwarded with the appropriate remuneration to the above address. All awards by ordinary post. If airmail required, enclose appropriate IC.

Please Note: "Grand Award" revision and amendments. Due to the unforeseen paperwork needed with the original Rosetown of New Zealand Grand Award with three levels, the decision has been made to revise and amend it to two levels (as above).

The Tane Mahuta Award

By Branch 28 with VHF and HF Rules:

1. The HF Tane Mahuta Award for 20 contacts including at least one in each of the Counties of Rodney, Otamatea, Hobson, Hokianga, Mangonui, Whangaroa, Bay of Islands, and Whangarei with the rules of NZC Award applying.

2. The VHF Tane Mahuta Award for 20 contacts including at least one in each of the Locator Squares RF63, RF 64, RF65, RF74 and that part of RF73 north of 36° 30'; that is, with Sub-Squares ending in M to X. Contacts must be made from one square to another.

3. Portable and Mobile operation is permitted.

4. Multiple contacts are permitted provided the station contacted is located in a different County or Locator Square for each contact.

5. Repeater contacts are permitted if they are made through Northland repeaters at 7100, 7150, 7175, 7200 from outside the Northland area.

6. Contacts on or after January 1, 1985 are eligible.

7. QSL cards are not required. Send certified list of relevant data. BUT for the VHF Award it is necessary to establish the full QTH Locator of the station worked.

8. Applications to Northland Award Custodian, PO Box 10-078, Te Mai, Whangarei, with cost as within New Zealand NZ\$2.00, Australia A\$2.00, others US\$2.00.

The Wellington Branch 50 Award

Requirements

ZL Amateurs need 20 points from working members of Branch 50. Club Station ZL2WB counts 5 points, Branch 50 Committee members 3 points, all other Branch members count 1 point.

Overseas stations require five QSOs with stations in the Wellington area. (Wellington to Tawa but not Hutt Valley) or members of the Wellington Branch 50 NZART wherever they live.

Modes

All modes CW, FM, RTTY, Packet, SSB, etc.

Bands

All Amateur bands HF and VHF. NOTE: Contacts on Branch 50 Sunday morning Net don't count towards the award.

Repeaters

Repeater contacts to count.

Endorsements

Endorsements on request for Band/Mode, etc.

Cost

Cost to be \$5.00 per Award or six IRCs.

Administration

Contacts after April 1, 1992, will qualify and the Award will be issued by Wellington Branch NZART, PO Box 6464, Wellington 6035, New Zealand.

Logs

Copy of log entries to Branch only. No need for them to be certified, QSLs are not needed.

Waitara Branch Award

The Waitara Branch Award is available to amateurs and SWLs for contacts since January 1, 1986, with stations residing in the Waitara Branch area. Club station ZL2TO, 3 points; YLs and CW contacts 2 points; any other stations 1 point each. Each station to be worked once only. ZLs require 8 points. VKs require 6 points. DX stations 3 points. Repeater contact restricted to limited licence holders. Log with full QSO data with \$3.00 to J. O. Herbert ZL2BPW, Mataro Road, Urenui, RD 45, Taranaki 4655.

Waitomo Award

Make 10 points with Branch 55 contacts as follows: VHF Simplex or CW, 2 points; VHF or UHF Repeater, 1 point; HF Phone, 1 point; HF CW, 2 points; VHF Satellite, 2 points; Club Station ZL11Z, 2 points. Award not open to SWLs.

Log details and \$2.00 to I. M. Howitt ZL11Z, 15 Frederick Street, Otorohanga 2554.

Wanganui Award

For contacts since 1-1-82 with permanent residents in the Wanganui area—one point; with Wanganui-based Mobile stations regardless of

location—one point; with ZL2JA—two points. Overseas stations require three points; ZLs require five points. (Repeater contacts acceptable.)

QSO details with \$3.00 or five IRCs to Award Manager, 1 Caversham Road, Wanganui.

Western Suburbs Radio Club Award

For contacts with any New Zealand amateur station. Use last letter of call-signs to make up words WESTERN SUBURBS RADIO CLUB. Branch 03 members may be used as bonus to replace any missing letters. Endorsement for band/mode. Certified list with 50 cents (overseas six IRCs or \$2.00) to WSRG, P.O. Box 15-122, New Lynn, Auckland 7.

New Zealand Women Amateur Radio Operators WARO Award

General

Contacts may be any mode, any band or mixed, with applicants contacts all from the same QTH (except as in VHF Section), but contacts via repeaters, in WARO Nets or contests are not eligible. No QSLs required. Send full log details certified by one other licensed radio amateur to Custodian Jeanne Gilchrist ZL4JG, 37 Roy Crescent, Concord, Dunedin 9006, New Zealand with sufficient postage for return of award.

HF Section

ZL and VK stations work 12 WARO members resident in New Zealand, DX stations work six. Contacts to date from June 1 1969. Endorsement seals available to ZL and VK stations for each additional 12 contacts, DX stations six. Contacts with DX members of WARO qualify for endorsements but applications must contain at least three ZL contacts.

VHF Section

Ten VHF contacts with WARO members dating from January 1 1979. WARO members and/or applicants may be home station, mobile or portable. Endorsements for each additional five.

SWL Section

ZL and VK stations list 20 contacts heard with WARO members, DX list ten, dating from January 1 1979. List full log details with call-signs of both stations. Endorsements for each additional ten (five for DX stations).

NZWARO Century Award

1. Applications to contain full log details of contacts with 100 NZWARO members (DX members included) dating from June 1 1987, and to be signed by one other licensed radio amateur.

2. Contacts may be any mode, any band or mixed, and from any QTH, but each YL claimed must be a financial member of NZWARO at

the time of the contact and may be counted once only.

3. Contacts made via repeaters and in nets will qualify and contest contacts made after June 1 1990 will be accepted.

4. No QSLs required. Send list of full log details and \$2.00 to Custodian, Jeanne Gilchrist ZL4JG, 37 Roy Crescent, Concord, Dunedin 9006, New Zealand.

NZWARO Mountain Buttercup Award

1. For contacts with licensed NZWARO members, resident, visiting, mobile, etc, in the 60 towns named in the official list. WARO members working mobile, portable, etc may claim the relevant town for her own credit.

2. Basic award is available for list of 30 contacts with endorsement seals for each further five contacts up to the full 60 required. Applicants submitting a list of the full 60 valid contacts will receive a special endorsement making the award distinctive from those gained for the lesser number of contacts.

3. Contacts may be any mode, any band or mixed and made from any QTH, but each YL worked must be a financial member of NZWARO at the time of the contact and must be within a 25 km radius of the centre of the town claimed.

4. Contacts made via repeaters, in nets and in contests will qualify and the same WARO members may be contacted in any number of towns.

5. Award dates from January 1 1989. Send applications after 30 contacts containing full log details with the name of YL and town where worked, signed by one other radio amateur, together with \$2.00 to Custodian Jeanne Gilchrist ZL4JG, 37 Roy Crescent, Concord, Dunedin 9006, New Zealand. An official list of towns required to be worked available from the custodian upon receipt of stamped addressed envelope. No QSLs required.

6. A different series of endorsement seals is available for each further ten contacts (after the basic 60) using the same list of towns. The same WARO members may be worked but each must be in a different town to where previously claimed. Please send SAE with endorsement applications.

North Island

1. Auckland
2. Dannevirke
3. Dargaville
4. Eketahuna
5. Featherston
6. Gisborne
7. Hamilton
8. Hawera
9. Helensville
10. Kaikohe
11. Kaitia
12. Masterton

13. Matamata
14. Morrinsville
15. Napier
16. New Plymouth
17. Opotiki
18. Orewa
19. Otaki
20. Paia
21. Palmerston North
22. Papakura
23. Putaruru
24. Rotorua
25. Taihape

26. Taumarunui
27. Taupo
28. Tauranga
29. Thames
30. Te Awamutu
31. Te Kuiti
32. Turangi
33. Upper Hutt
34. Waihi
35. Wairoa
36. Wanganui
37. Wellington
38. Wellsford

39. Whakatane
40. Whangarei

South Island

41. Alexandra
42. Ashburton
43. Balclutha
44. Blenheim
45. Christchurch
46. Cromwell
47. Dunedin
48. Gore

49. Greymouth
50. Hokitika
51. Invercargill
52. Kaikoura
53. Motueka
54. Nelson
55. Oamaru
56. Queenstown
57. Reefton
58. Timaru
59. Wanaka
60. Westport

Overseas Awards

Note

1. There are hundreds of awards which are published in amateur radio periodicals throughout the world each month! Many are listed in RSGB publication *Amateur Radio Awards* (priced in UK £1.20) and several publications of DX Awards Guide by Chuck Ellis, priced about \$7.00 to \$8.00 each! CHC Directory of Awards has been revised and published by NZART member Scott Douglas KB7SB. This is a very comprehensive publication selling for about US\$12.50 (check with NZART Awards Manager about these).

2. Most overseas awards can be certified by NZART Awards Manager so the QSLs don't have to be sent overseas BUT, always send a FULL checking list with all QSO data, etc., on which can be written the certification and which can be sent as the application. (ARRL Awards cannot be certified).

3. ALWAYS SEND SUFFICIENT RETURN POSTAGE for QSLs, etc. Print name and address on each sheet of paper used.

A-1 Operator Club

The basic aim of the A-1 Operator Club is to promote good operating in the amateur bands. To become a member one must be nominated by at least two operators who already belong. Every amateur should strive to merit nomination by following standard operating practice, by observing the rules of good Phone operation, and making his CW as clean and accurate as possible. An attractive certificate is awarded to each amateur who qualifies for membership. Note: This award is sponsored by the ARRL. Several ZL amateurs are members. Strive to merit nomination—you never know who may be listening. Similar awards are: TOPS; FOC; HSC.

WAC—Worked All Continents

Issued by IARU only through affiliated Societies. Applications from financial members of NZART only, must be made through the Awards Manager, accompanied by a checking sheet, QSL cards from the six

continents, and return stamped envelope.

The following eight certificates are available: Basic (mixed mode), CW, Phone, SSTV, RITY, FAX, Satellite and 5-band. In addition, the following endorsement stickers are available: QRP, 1.8 MHz, 3.5 MHz, 50 MHz, 144 MHz, any higher frequency band and 6-band. Contacts made on 10/18/24 MHz or via satellite are void for the 5-band certificate and 6-band sticker.

QRP is defined as five watts OUTPUT (10 W input) and QRP contacts must date on or after January 1 1985.

ZL applicants must be NZART members and enclose Break-In label with application.

There is NO charge.

French Awards

For information on DDFM, DUF, DTA, DTC, DPE, write to REF, 69 Bd de Bercy, Paris 12 (with 1 IRC) for full information bulletin. (This can be obtained on loan from NZART Awards Manager.)

(Applicants for above can be certified by Awards Manager.)

CQ Magazine Awards

Application forms for CQ Awards available from NZART Awards Manager—for WPX, SSB DX, CW DX, WAZ.

RSGB Awards

For WBC, BCRTA, CDX, etc.—SASE to NZART Awards Manager.

ARRL Awards

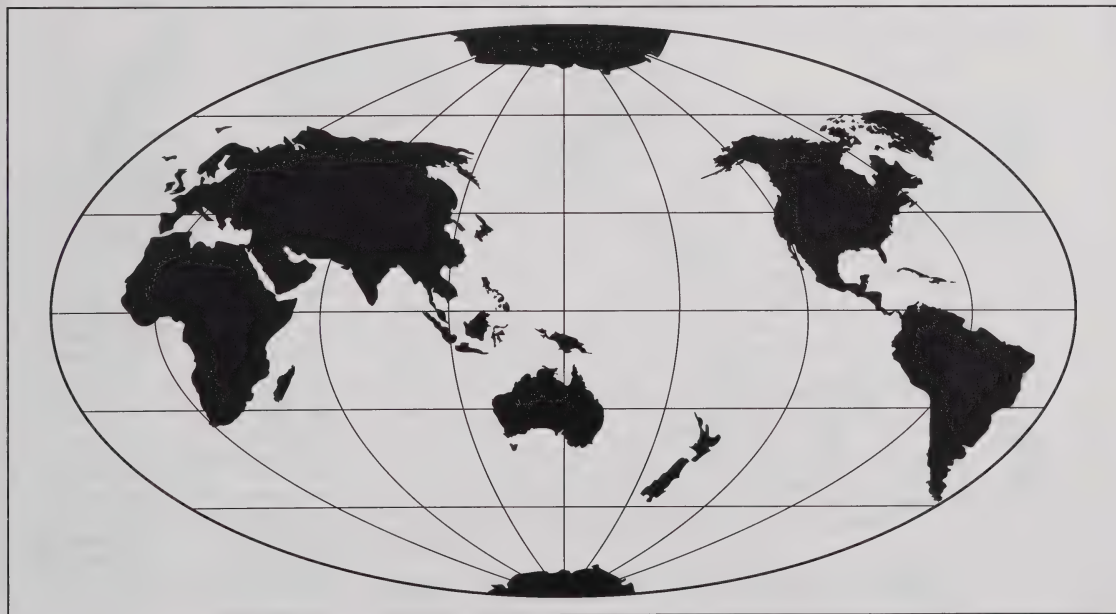
WAS—Worked All States

Obtain the rules and application forms for WAS and 5BWAS by sending a business-size SAE and a few IRC to the ARRL Headquarters, 225 Main Street, Newington, CT 06111, USA.

DXCC—DX Century Club

*See "Countries List" in this Call Book.

Many endorsements etc. available—full reprint of rules (4 A4 sheets) from Awards Manager for \$1.00.



NEW ZEALAND COUNTIES

NORTH ISLAND COUNTIES

1. Mangonui
2. Whangaroa
3. Holianga
4. Bay of Islands
5. Whangarei
6. Hobson
7. Otamatea
8. Rodney
9. Great Barrier Island
10. Waitemata
11. Franklin
12. Raglan
13. Waikato
14. Waipa
15. Otorohanga
16. Waitomo
17. Taumarunui
18. Coromandel
19. Thames
20. Hauraki Plains
21. Ohinemuri
22. Piako
23. Matamata
24. Tauranga
25. Rotorua
26. Taupo
27. Whakatane
28. Opotiki
29. Waipapua
30. Waikohu
31. Cook
32. Wairoa
33. Hawke's Bay
34. Waipawa
35. Patangata
36. Waipukurau
37. Dannevirke
38. Woodville
39. Clifton
40. Taranaki
41. Inglewood
42. Stratford
43. Egmont
44. Eltham
45. Waimate West
46. Hawera
47. Patea
48. Waimarino
49. Waitotara
50. Wanganui
51. Rangitikei
52. Kaitake
53. Pohangina
54. Orua
55. Manawatu
56. Kairanga
57. Horowhenua
58. Hutt
59. Pahiatua
60. Akitio
61. Eketahuna
62. Masterton
63. Wairapa South
64. Featherston

SOUTH ISLAND COUNTIES

65. Marlborough
66. Awatere
67. Kaikoura
68. Golden Bay
69. Waimea
70. Buller
71. Inangahua
72. Grey
73. Westland
74. Amuri
75. Cheviot
76. Waipara
77. Kowai
78. Ashley
79. Rangiora
80. Eyre
81. Oxford
82. Tawera
83. Malvern
84. Paparua
85. Waimairi
86. Heathcote
87. Halswell
88. Mount Herbert
89. Akaroa
90. Chatham Islands
91. Wairewa
92. Ellesmere
93. Ashburton
94. Geraldine
95. Levels
96. Mackenzie
97. Waimate
98. Waitaki
99. Waihemo
100. Waikouaiti
101. Peninsula
102. Taieri
103. Bruce
104. Clutha
105. Tuapeka
106. Maniototo
107. Vincent
108. Lake
109. Southland
110. Wallace
111. Fiord
112. Stewart Island





One of the many facets of Amateur Radio is operating in a contest. This is basically attempting to make as many contacts as possible in a given length of time. Depending on the rules of the specific contest, those contacts may be on one band, or all bands, and the mode can be Phone, CW or Digital. In most overseas contests, only one contact on each band is permitted during the contest period. However, in New Zealand, due to the relatively low number of amateur radio operators in the country, the total contest operating time is often broken into contest periods, typically one hour, and the same station can be worked again in each new period. This helps to keep interest and activity up on the bands.

For the newcomer to contests, getting started requires nothing more than to read the rules for the particular event, and after establishing contact with another participant with key or mike, exchange the required information. This exchange

of information usually includes an RS(T) report and a number, starting with 001, and increasing by one for every contact. This incrementing number is by no means the only method used, and other reports may require your CQ or ITU Zone Number, your age, your name or your NZART Branch number. The idea is to generate a report that can be verified by the receiving station and therefore complete the QSO.

There are two basic operating methods: select a clear frequency (if possible) and call CQ Contest, or on CW call CQ TEST, and answer all callers; or to tune the band or bands in use and answer each CQ you hear being called. This is known as "hunt and pounce". It goes without saying that a station with efficient antennas is going to be hard to beat, but even with a simple dipole, very good results can be obtained. After a few attempts, the incentive to improve antennas, equipment and operating skills will be great.

Some of the contests organized by NZART

Jock White National Field Day

Usually held over the last weekend of February each year, this is primarily a Branch effort. Bands used are 80m and 40m, Phone and CW.

Sangster Shield Contest

Held in May, this is a low power, 80m, CW only event. There are a number of classes, and also a class for newly licensed operators.

Memorial Contest

Held on the first weekend in July each year, in memory of those of our ranks who lost their lives in the World Wars. This is an 80m contest, with classes for both Phone, CW and an Open section (Phone and CW combined).

VK-ZL-Oceania Contest

This international contest is run on alternative years with the Wireless Institute of Australia. It runs for a 24 hour period, and the Phone section

is held over the first weekend in October each year, while the CW section is held on the second weekend. All bands may be used.

Other contest events on the calendar include a frequency measuring contest, a contest organized by WARO, an event where old time or WW II equipment is used, and a CW event where only other than normal keying may be used!

A more recent addition to the contest calendar are the sprints. These events are for one hour duration only, and are proving very popular.

The Contest Calendar in *Break-In* lists the contests for the coming months, and gives full details of the more popular events, while brief summaries of other contest may be given.

As Contest Manager, I am only too happy to provide full information on almost any contest held worldwide. Enclose a self-addressed, stamped envelope with your request.

Contests can be fun. Give it a go!

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An example of Amateur Radio serving the wider Community

Founder
Allen J. Little
QSM JP
ZL2GB

We read whole
information as it is
printed from:

- Newspapers
- Magazines
- Periodicals

IARU HF CONTEST CALENDAR

Contest		Sponsor	Weekend	Times
January				
CW	HA-DX	MRASZ	Third full	Saturday 2200–Sunday 2200
CW	CQ WW 160	CQ Magazine	Last full	Fridayday 2200–Sunday 1600
PH	Belgium DX	UBA	Last full	Saturday 1300–Sunday 1300
CW	French DX	REF	Last full	Saturday 0600–Sunday 1800
February				
M	PACC	VERON (Dutch)	Second	Saturday 1200–Sunday 1200
CW	ARRL-DX	ARRL	Third full	Saturday 0000–Sunday 2400
CW	7MHz CW	RSGB	Last full	Saturday 1500–Sunday 0900
PH	CQ WW 160	CQ Magazine	Last full	Friday 2200–Sunday 1600
PH	French DX	REF	Last full	Saturday 0600–Sunday 1800
CW	Belgium DX	UBA	Last full	Saturday 1300–Sunday 1300
March				
PH	ARRL-DX	ARRL	First full	Saturday 0000–Sunday 2400
CW	Commonwealth	RSGB	Second full	Saturday 1200–Sunday 1200
R	BARTG	BARTG	Third full	Saturday 0200–Monday 0200
PH	CQ WPX	CQ Magazine	Last full	Saturday 0000–Sunday 2400
April				
PH	SP-DX	PZK (Polish)	First full	Saturday 1500–Sunday 2400
M	Helvetia	USKA (Swiss)	Last full	Saturday 1300–Sunday 1300
May				
M	International DX	ARI (Italian)	First full	Saturday 1200–Sunday 1200
M	CQ-MIR	RSF (Russian)	Second full	Saturday 2100–Sunday 2100
CW	CQ WPX	CQ Magazine	Last full	Saturday 0000–Sunday 2400
June				
PH	All Asia	JARL	Third full	Saturday 0000–Sunday 2400
July				
M	IARU Championships	IARU/ARRL	Second full	Saturday 1200–Sunday 1200
CW	SEANET-DX	SEANET	Third full	Saturday 0000–Sunday 2400
PH	IOTA Contest	RSGB	Last full	Saturday 1200–Sunday 1200
August				
M	YO-DX	Roumanian	First full	Saturday 2000–Sunday 1600
CW	WAE-DX	DARC (German)	Second full	Saturday 0000–Sunday 2400
PH	SEANET-DX	SEANET	Third full	Saturday 0000–Sunday 2400
CW	All Asia	JARL	Last full	Saturday 0000–Sunday 2400
September				
CW	LZ-DX	Bulgarian	First Sunday	Sunday 0000–Sunday 2400
PH	WAE-DX	DARC	Second full	Saturday 0000–Sunday 2400
CW	SAC	Scandinavian	Third full	Saturday 1500–Sunday 1800
PH	SAC	Scandinavian	Fourth full	Saturday 1500–Sunday 1800
R	CW WW RTTY	CQ Magazine	Last full	
October				
PH	VK-ZL-Oceania	WIA/NZART	First full	Saturday 1000–Sunday 1000
CW	VK/ZL-Oceania	WIA/NZART	Second full	Saturday 1000–Sunday 1000
CW	21/28MHz	RSGB	Third Sunday	Sunday 0700–Sunday 1900
PH	CQ World-Wide	CQ Magazine	Last full	Saturday 0000–Sunday 2400
November				
M	OK-DX	Czech	Second Sunday	Sunday 0000–Sunday 2400
CW	Ukrainian DX	Ukraine	Third full	Saturday 1200–Sunday 1200
CW	CQ World-Wide	CQ Magazine	Last full	Saturday 0000–Sunday 2400
December				
CW	ARRL 160m	ARRL	First full	Saturday 2200–Sunday 1600
M	ARRL 10m	ARRL	Second full	Saturday 0000–Sunday 2400

Key: M—Multimode; PH—Phone; CW—CW; R—RTTY

Most international contest dates are co-ordinated on a worldwide basis by the IARU, but local events can be influenced by moveable dates such as Easter.

There is no substitute for checking the rules and dates with the organizers—just to be sure.



What is ARDF?

In simple terms ARDF is looking for a transmitter. In IARU Region III ARDF is played on 80 m and 2 m

The competition would normally be in a rural area, preferably wooded valleys. Within this area are placed five transmitters that have to be found by the competitors. A sixth transmitter is usually provided at the finish line to help lost competitors find their way home.

Each transmitter will be keying a unique identification code in the form MOE, MOI, MOS, MOH, MOS. On VHF this will be MCW and CW on HF. These correspond to transmitters numbered one through five.

At the competition there may be several classes of competitor, not all classes are required to find all the transmitters.

Contestants are free to find the transmitters in any order they wish.

There is a time limit set for the course. Any competitor who has not finished within this time is disqualified. This time limit is set by the organizing group and takes into account the number of competitors, the terrain and the length of the course. IARU Region III rules recommends that it should be 100 to 140 minutes for a 4-7 km course.

The five transmitters on the course operate sequentially on a common frequency. Each transmitter will operate for one minute and then be silent for four minutes, during which the other four transmitters will operate.

In ARDF the transmitters are not usually "hidden", and in fact a competitor is only required to find the control point, which will be within 2 m of the transmitter. Figure 1 shows a typical control point.

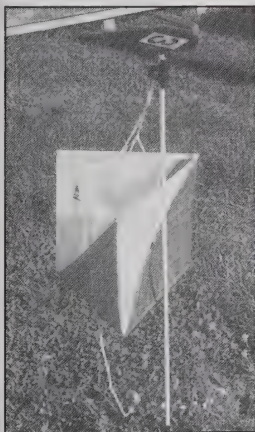


Figure 1.

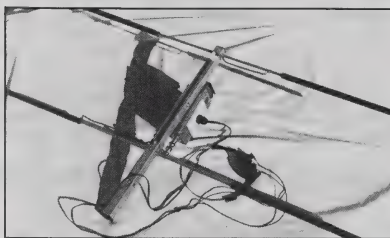


Figure 3.

Included at the control point is a "punch" that is used to mark your card to prove that you have visited the control point.

At each transmitter a referee will be sited to ensure there is no collusion between competitors as ARDF is an individual sport. Also the referee will ensure there is no "foul play", etc.

The "winner" of the event is the competitor who finds the most number of transmitters for their class in the shortest time.

What is needed to participate?

That depends a bit on you and on the course. It is possible to use a simple handheld. Any form of directional aerial can be used for ARDF, additionally an attenuator and a method of accurately determining signal strength would be useful.

As the level of competition becomes "keener" your equipment needs to become more refined. There are a number of commercial receivers available at a range of prices. Most of these receivers provide attenuators to cover a wide dynamic range and audible and visual strength indicators.

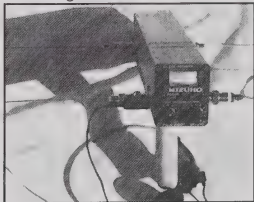


Figure 2.

Figure 2 shows a Japanese ARDF receiver. This is an excellent commercial design packed full of features. The unit is available from Apex Communications.⁽¹⁾

A full set of equipment is available from Australia from Ron Graham.⁽²⁾ Figures 3 and 4 are a couple of view of Ron Graham's VHF receiver. This is an AM dual conversion superhet based on the MC6632 chip. It is tuneable over the bottom part of 2 m and includes an audio signal strength indicator. The antenna is a modified HB9V.

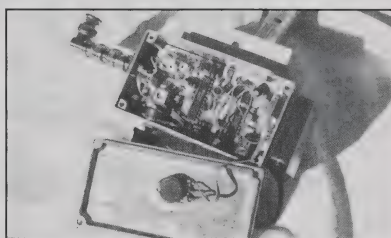


Figure 4.

The Auckland VHF Group⁽³⁾ has available a microprocessor key that will meet most requirements (Figure 5). This was designed to interface with handhelds to provide Clubs with a quick and easy way to provide

vide VHF ARDF transmitters. It also includes an output for keying a 80 m transmitter.

Figure 6 shows a typical 2 m transmitter that can be used as the hidden transmitter.

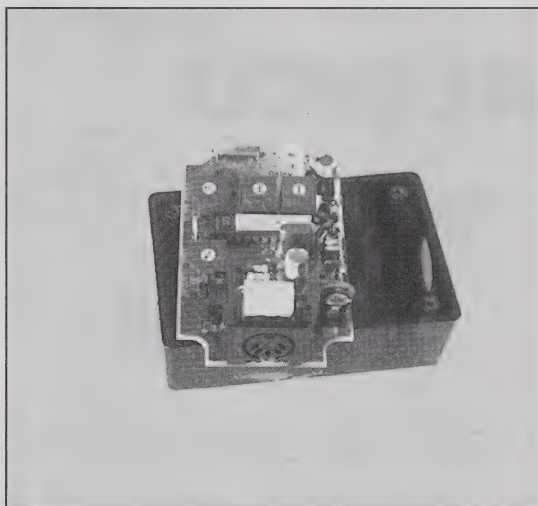


Figure 5.

How fit do I need to be?

If you can walk 5 km then you will be able to compete in club events with a degree of success.

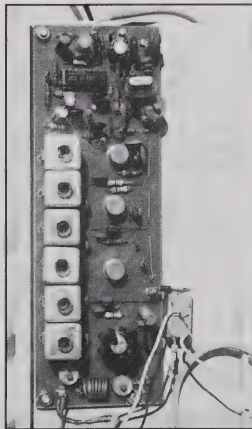


Figure 6.

As the level of competition increases, so must your physical "prowess". To become a Regional or World Champion you should expect to become very much more athletic.

For most people there is a great amount of participation and fun that can be had between these two extremes.

Happy ARDF

References

1. Dave Walker, Apex Communications, Napier. Telephone (06) 876-5014.
2. Ron Graham Electronics, Box 323, Sarina, Queensland 4737, Australia.
3. Auckland VHF Group, Box 10-138, Dominion Road, Auckland 1030.



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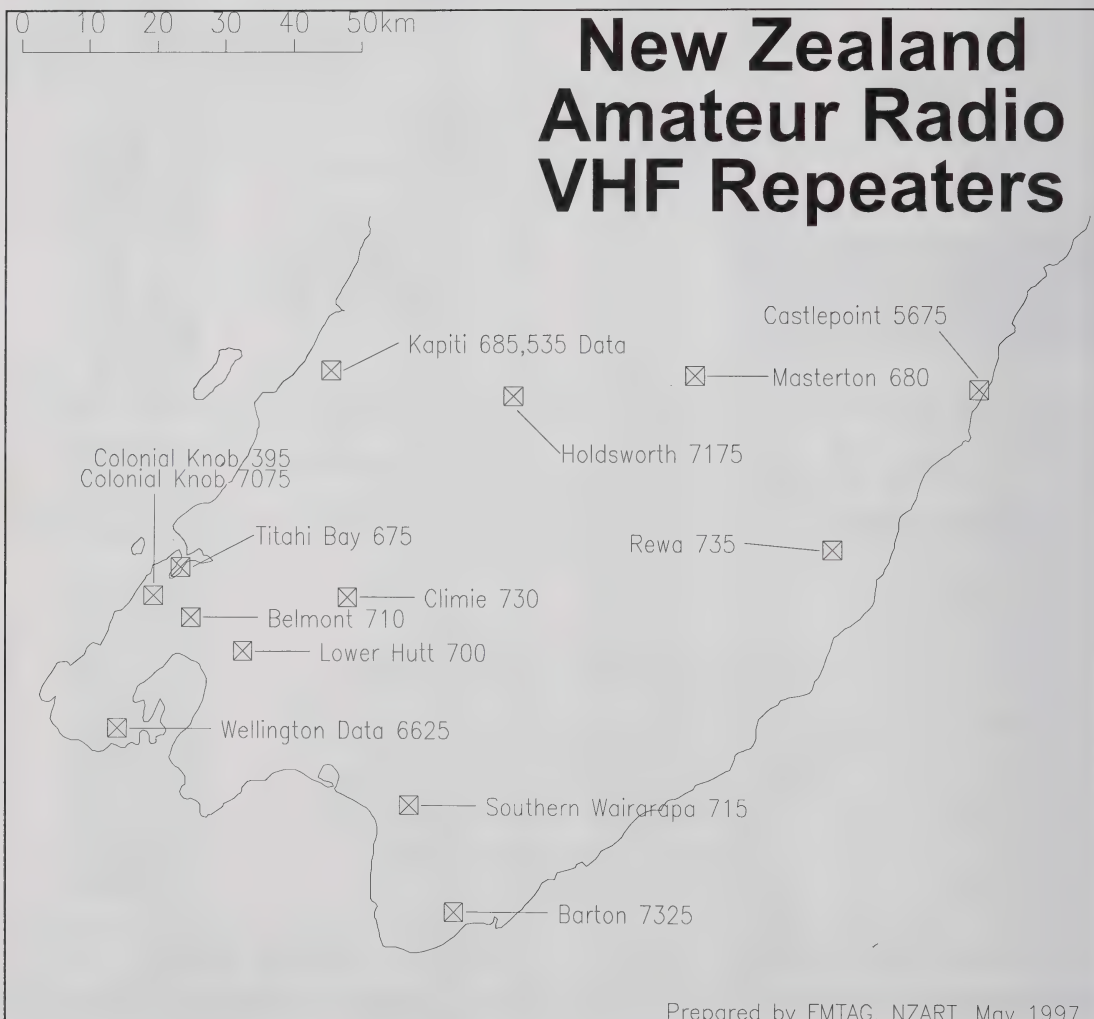
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VHF REPEATERS

The following are 2-metre repeaters believed to be operational at the time of writing. Repeaters are shown roughly in geographical order, from north to south. Two metre repeaters below 147.000MHz have a -600kHz split, while the rest have a +600kHz split. Six metre repeaters have a -1MHz split.

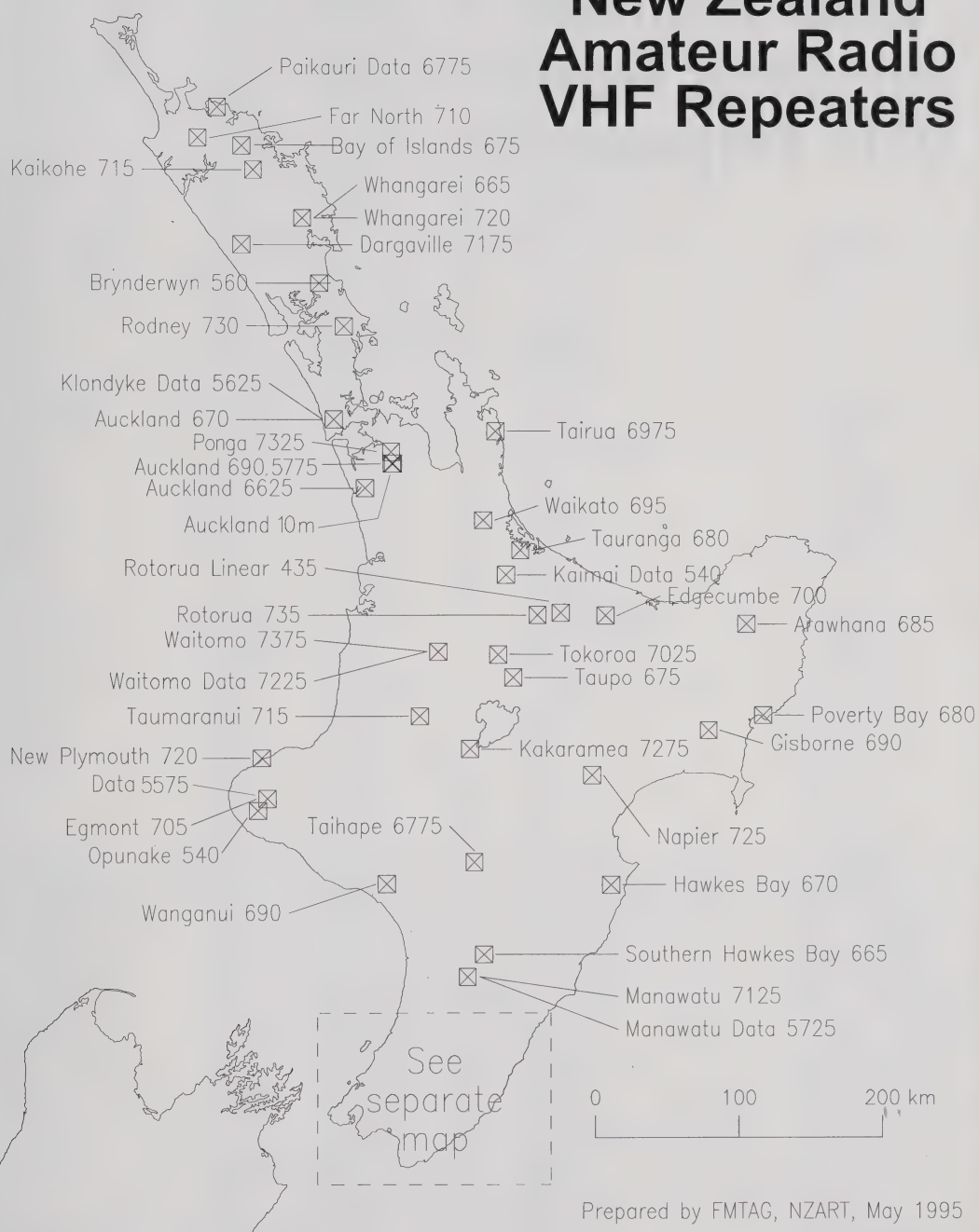
Name	Frequency (MHz)	InfoMap260	Branch	Location	Trustees	Notes
Paikauri Data 6775	146.7750	004 674923	78	Paikauri	ZL1AU1,ZL1BG	35
Far North 710	147.1000	004 536707	78	Mt Maungataureia	ZL1ALU,ZL1BG	
Bay of Islands 675	146.7500	P05 844655	66	Manginangina	ZL2BER,ZL1GSN	
Kaikohē 715	147.1500	P05 877487	78	Browns Hill	ZL1UBQ,ZL1CBD	
Whangarei 665	146.6500	Q06 266150	28	Parakiore	ZL1UOH,ZL1ANI	2
Whangarei 720	147.2000	Q06 266150	28	Parakiore	ZL1UOH,ZL1ANI	
Dargaville 7175	147.1750	P07 843963	73	Pukewharariki	ZL1TVP,ZL1BAU	
Brynderwyn 560	145.6000	Q08 383694	66	Pilbrow Hill	ZL1UOH	
Rodney 730	147.3000	R09 558397	71	Dome	ZL1TBG,ZL1UO	5
ZL1AVQ	145.7250	R11 687817	66	University of Auckland	ZL1DDL,ZL1TDA	
Auckland 670	146.7000	Q11 488742	66	Ruaotewhenua	ZL1AFM	
Coromandel Peninsula 7075	147.0750	T11 381882				
Tairua 6975	146.9750	T11 609661	81	Tairua Lookout	ZL1THG,ZL1TAT	
Waitomo Data	147.2250	R11 502736	59	Rangititi Range	ZL1AMW,ZL1AKT	2
Bombay 690	146.9000	R12 890433	66	Mt Puketutu	ZL1UET	
Ponga 7325	147.3250	Q12 885517	SARG	Ponga Hill, Papakura		
Auckland 5775	145.7750	R11 676822	SARG	Auckland Sky Tower		
Auckland 10m	29.6400	Q12 885517	SARG	Ponga Hill		
Klondyke Data 5625	145.6250	R13 705258	66	Port Waikato	ZL1AFM	2
Auckland 6625	146.6250	R13 705258	66	Port Waikato	ZL1AFM	
Waikato 695	146.9500	T13 526038	81	Mt Te Aroha	ZL1TAT,ZL1THG	
ZL1UX BBS	144.6500	S14 102774	12	Hamilton Amateur Radio Clubrooms	ZL1PK,ZL4FS	
ZL1UX BBS	144.8000	S14 102774	12	Hamilton Amateur Radio Clubrooms	ZL1PK,ZL4FS	
Hamilton AM 5375	145.3750	(Hamilton)	81,SPAM			
Tauranga 680	146.8000	U14 784830	39	Mt Minden	ZL1AFC,ZL1QI	
Te Puke 7175	147.1750	U14 998801	53	Papamoa Trig	ZL1ARL,ZL3GR	5
ZL1UX BBS	147.5000	S14 102774	12	Hamilton Amateur Radio Clubrooms	ZL1PK,ZL4FS	
Kaimai Data 540	145.4000	T15 684649	81	Takaurunga	ZL1UAB,ZL1TAT	2
Rotorua Linear 435	144.3500	U16 068393	33	Whakapoungakau Airstrip	ZL1BTB,ZL1PJ	5
Arowhana 685	146.8500	Y16 362319	11	Arowhana	ZL2TNP,ZL2AQ5	5
Edgecumbe 700	147.0000	V16 378374	51	Mt Edgecumbe	ZL1TKL,ZL1BGE	
Tokoroa 7025	147.0250	T16 630103	57	5km Nth Whakamaru	ZL1TDV,ZL1UGH	5
Rotorua 735	147.3500	U16 905378	33	Mt Ngongotaha	ZL1AKC,ZL1PJ	
Waitomo 7375	147.3750	S16 214123	55	Rangitoto Range	ZL1HJ,ZL4SU	
Taupo 675	146.7500	U17 736942	60	Maroanui	ZL1LES,ZL1OZ	
Poverty Bay 680	146.8000	Y18 477679	11	Kaiti Hill, Gisborne	ZL2TNP,ZL2AQ5	
Gisborne 690	146.9000	X18 095574	11	Whakapunake	ZL2TNP,ZL2AQ5	
Taumarunui 715	147.1500	S18 086672	38	Hikurangi	ZL1AO,ZL1TIG	5
New Plymouth 720	147.2000	P19 990382	27	Power Station Chimney	ZL1AO,ZL1TIG	
Napier 725	147.2500	V19 283237	25	Tarapouui	ZL2BZH,ZL2RA	
Kakaramēa 7275	147.2750	T19 436442	38	Kakaramēa	ZL2TIS,ZL3DK	
Taranaki Data 5575	145.575	P20 051098	27	Jackson Point Lookout	ZL1AO,ZL1TIG	
Opunake 540	145.4000	P20 961014	32	Opunake	ZL2ADU,ZL2BQW	
Egmont 705	147.0500	P20 025095	54	East Egmont, Jackson's Lookout	ZL2AHI,ZL2AFE	
Taihape 6775	146.7750	T21 446632	23	Cleavers Hill	ZL2TRY,ZL2AMT	
Wanganui 690	146.9000	S21 066461	48	Maewa Bench Mark	ZL2BGE,ZL2TDI	
Hawkes Bay 665/Te Mata 870 link	146.0500	V22 452597	25,13	Te Mata Peak	ZL3DK,ZL2BDQ	4
Hawkes Bay 670	146.7000	V22 418495	13	Kahuranaki	ZL3DK,ZL2UGB	
Tararua 665	146.6500	T23 481010	06	Wharite	ZL2VL	
Manawatu Data 5725	145.7250	T24 413856	20	Pahiatua Track	ZL2BFR,ZL2AUB	
Manawatu 7125	147.1250	T24 418852	20	Pahiatua track	ZL2BFR,ZL2AUB	
Kapiti Data 535	145.3500	R26 875374	69	Mt Field	ZL2TFP,ZL2TUV	2
Castlepoint 5675	145.6750	U26 820346	46	Whakataki	ZL2BFY,ZL2UCW	
Motueka 670	146.7000	N26 983206	24	Mt Campbell	ZL2BCG,ZL2VBO	
Masterton 680	146.8000	T26 406366	46	Mt Rangitumau	ZL2UCW,ZL2BFY	
Kapiti 685	146.8500	R26 875374	69	Mt Field	ZL2TFP,ZL2TUV	
Holdsworth 7175	147.1750	S26 137342	46	Mt Holdsworth	ZL2BFU,ZL2BFY	5
Rewa 735	147.3500	T26 606122	46	Mt Rewa	ZL2UCW,ZL2BFU	
Golden Bay 7375	147.3750	N26 983203	24	Takaka Hill	ZL2BCG,ZL2VBO	4
Takaka Hill Link	147.7500	N26 983203	24	Takaka Hill	ZL2BCG,ZL2VBO	4
Colonial Knob 395	53.9500	R27 614043	74	Colonial Knob	ZL2ARW,ZL2TAR	
Wellington Data 6625	146.6250	R27 560848	74	Hawkins Hill	ZL2BAC,ZL2TRV	2
Titahi Bay 675	146.7500	R27 654094	42	Onewoto Reservoir	ZL1VD,ZL1GC	
Lower Hutt 700	147.0000	R27 742968	18	Mt Fitzherbert	ZL2QZ,ZL2UGR	
Colonial Knob 7075	147.0750	R27 614043	74	Colonial Knob	ZL2ARW,ZL2TRV	
Belmont 710	147.1000	R27 668011	74	Belmont	ZL2ARW,ZL2TRV	
Nelson 720	147.2000	O27 333902	26	Saddle Hill	ZL2BCA	5
Picton 7225	147.2250	P27 923904	22	Mt Freeth	ZL2BK,ZL2IW	45
Climie Data 5425	145.425	R27 898041	63	Mt Climie	ZL2BIR	
Climie 730	147.3000	R27 898041	63	Mt Climie	ZL2BIR	
Blenheim 695	146.9500	P28 867510	22	The Ned	ZL2BK,ZL2IW	5
Sthn. Wairarapa 715	147.1500	S28 982739	82	Warren's Airstrip	ZL2LL,ZL2BCM	

Name	Frequency (MHz)	InfoMap260	Branch	Location	Trustees	Notes
Barton 7325	147.3250	S28 046591	46	Mt Barton	ZL2BFY,ZL2BFU	5
Westport 675	146.7500	K29 824386	62	Cape Foulwind Lighthouse	ZL2ULS,ZL3VC	
Murchison 680	146.8000	M29 682416	26	Mt Murchison	ZL2BCA	
Westport 715	147.1500	L29 140441	62	Mt Frederick	ZL2ULS,ZL3VC	5
Cronadun -> Sewell Peak Link	146.3500	L30 650087	62	Cronadun	ZL2ULS,ZL3VC	4
Cronadun -> Mt Frederick Link	147.7500	L30 650087	62	Cronadun	ZL2ULS,ZL3VC	4
Kaikoura 690	146.9000	O31 676646	76	Kaikoura peninsula	ZL3PZ,ZL3GF	
Greymouth 695	146.9500	K31 733651	49	Sewell Peak	ZL3ADH,ZL3TY	
North Canterbury 6975	146.9750	M33 602152	68	Mt Noble	ZL3QR,ZL3MJS	5
Christchurch 705	147.0500	M36 801322	05	Marleys Hill	ZL3ADF	
Christchurch 725	147.2500	M36 892243	05	Herbert Peak	ZL3ADF	5
Timaru 6625	146.6250	J37 559434	34	Mt Horrible	ZL3MN	
Tekapo 680	146.8000	I38 192692	34	Mt Rollesby	ZL3MN	
Oamaru 670	146.7000	I40 169030	64	Station Peak	ZL4SF,ZL4SN	
Waitake 695	146.9500	J40 452148	34	Mt Studholme	ZL3MN	
Queenstown 685	146.8500	F41 790626	75	Double Cone	ZL4JW,ZL4TIQ	5
Alexandra 3625	53.6250	G42 141336	61	Fruitlands	ZL4THT	
Alexandra 700	147.0000	G42 138331	61	Fruitlands	ZL4THT	
Dunedin Linear 435	144.3500	I44 200776	30	Highcliff Road	ZL4PZ	
Dunedin -> Queenstown link	146.2500	I44 231775	30	Karetai Road, Highcliff	ZL4PZ	4
Dunedin 665	146.6500	I44 231778	30	Karetai Road, Highcliff	ZL4PZ	
Dunedin 690	146.9000	I44 199854	30	Mt Cargill	ZL4PZ	
Gore 695	146.9500	F45 898551	08	McLeods Hill	ZL4AO,ZL4TCD	5
Balclutha 675	146.7500	G46 295350	35	Kuriwao	ZL4TLL	
Invercargill 680	146.8000	D46 109367	37	Bald Hill, Otautau	ZL4OX,ZL4TFJ	
Invercargill 5775	145.7750	E47 525895	37	Bluff Hill	ZL4OX,ZL4TFJ	



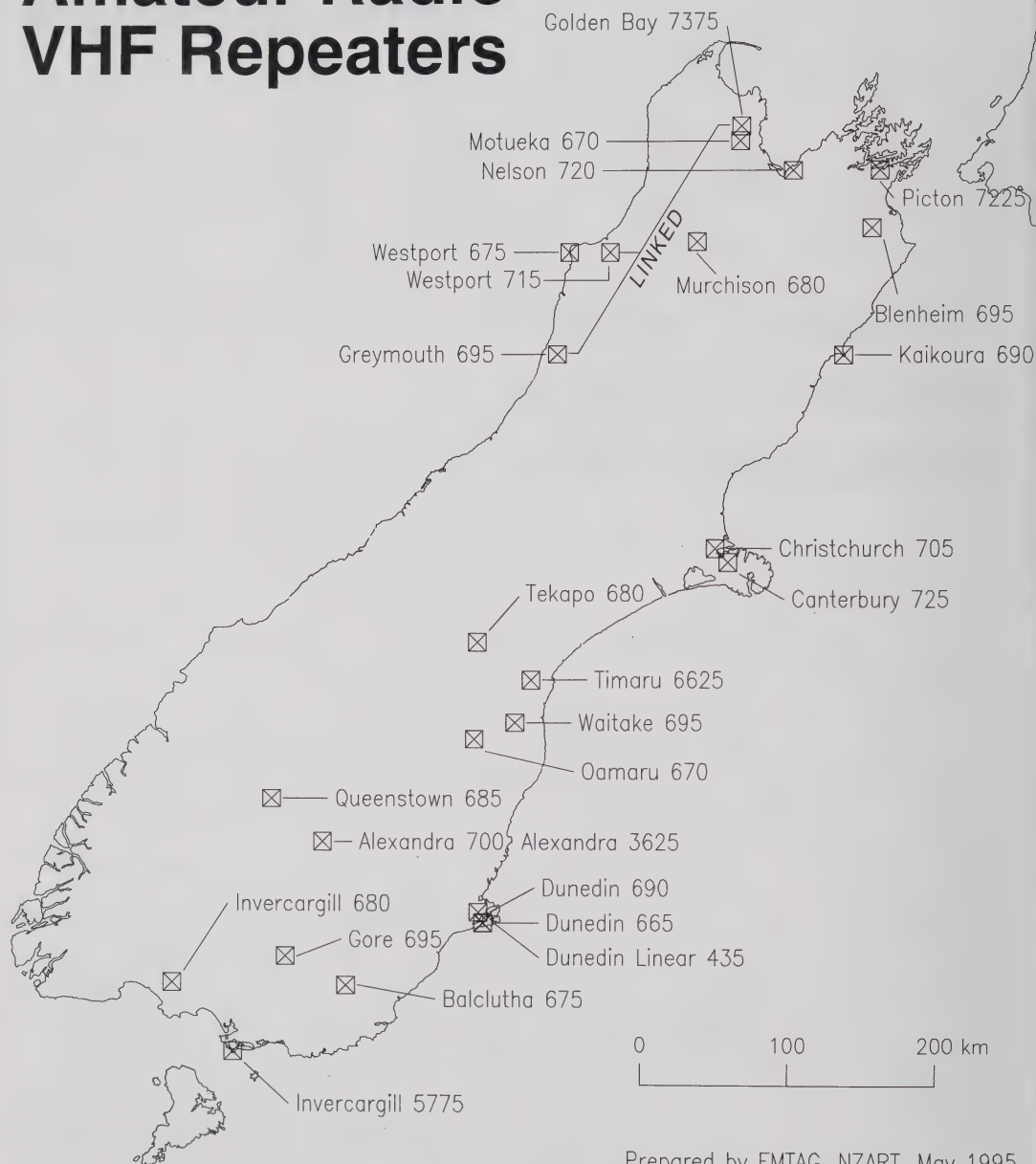
Prepared by FMTAG, NZART, May 1997

New Zealand Amateur Radio VHF Repeaters



Prepared by FMTAG, NZART, May 1995

New Zealand Amateur Radio VHF Repeaters



Prepared by FMTAG, NZART, May 1995

UHF/SHF REPEATERS

The following list includes the UHF/SHF repeaters, including ATV repeaters, believed to be operational at the time of writing. National System access repeaters are also shown.

Name	Frequency (MHz)	InfoMap260	Branch	Location	Trustees	Notes
Far North 405	434.5000	O04 586703	78	Maungataniwha		4
Whangarei 870	438.7000	Q07 317090	28	Mt Parahaki	ZL1UOH,ZL1IANI	
Bay of Islands 910	439.1000	P05 844655	66	Manginangina		4
Brynderwyn 4075	434.0750	Q08 383694	66	Pilbrow Hill	ZL1UOH	4
North Shore AX25	438.3000	R10 684921	29	Branch 29 Clubrooms		
Albany ATV Extender	443.2500	R10 622925	66	Albany Highway	ZL1ABS	1
Tairua Link	430.0630	T11 609662	81	Tairua Lookout	ZL1THG,ZL1TAT	4
Auckland 850	438.5000	R11 677788	66	Auckland City	ZL1UET	
Manurewa 8575	438.5750	R11 805664	SARG	Redoubt Rd. Manukau		
Ponga 8250	438.2500	Q12 885517	SARG	Ponga Hill		
Auckland 110	1291.1000	R11 676822	SARG	Auckland Sky Tower		
Auckland 180	1291.8000	R11 655765	66	Mt Roskill		
Auckland ATV	615.2500	R11 502736	66	Nihotupu	ZL2TOD	1
Hunua 860	438.6000	R12 895578	65	Clements Hill, Papakura	ZL1AKX,ZL1ARC	
Te Aroha Link	430.0630	T13 526039	81	Mt Te Aroha	ZL1THG,ZL1TAT	4
Waikato 840	438.4000	T13 526038	81	Mt Te Aroha	ZL1TAT,ZL1THG	
Auckland 845	438.4500	R13 705258	66	Port Waikato	ZL1AFM	
Port Waikato East ULS	438.9750	R13 705258	66	Port Waikato	ZL1AFM	4
Auckland Data 835	438.3500	R13 705258	66	Port Waikato	ZL1AFM	
Auckland 900	439.0000	R13 703262	66	Port Waikato	ZL1AFM	
Port Waikato south ULS	439.0250	R13 705258	66	Port Waikato	ZL1AFM	4
Port Waikato North ULS	439.0750	R13 705258	66	Port Waikato	ZL1AFM	4
Klondyke South MLS	1259.5000	R13 703262	74	Port Waikato	ZL2ARW,ZL2TRV	4
ZL1UX BBS	434.0000	S14 102774	12	Hamilton Amateur Radio Clubrooms	ZL1PK,ZL4FS	
ZL1UX BBS	438.3000	S14 102774	12	Hamilton Amateur Radio Clubrooms	ZL1PK,ZL4FS	
Te Puke 855	438.5500	U14 957807	53	Kopukairua	ZL1ARL,ZL1TAJ	
Tauranga 885	438.8500	U14 994798	39	Papamoa	ZL1BJP,ZL1QI	5
Hamilton City ATV	615.2760	S14 082776	81	Hamilton City	ZL1UAB,ZL1WTV	1
Kaimai ULS	433.9750	T15 684649	33	Takaurunga	ZL1BTB,ZL1UAB	4
Tokoroa 865	438.6500	T16 630103	57	5km Nth Whakamaru	ZL1TDV,ZL1UGH	5
Waitomo 870	438.7000	S16 214123	55	Rangitoto Range	ZL1HJ,ZL4SU	
Waitomo 9125	439.1250	S16 214123	55	Rangitoto Range		4
Rotorua 8925	438.9250	U16 080399	33	Whakapoungakau Trig	ZL1PJ,ZL1BTB	45
Whakapoungakau ULS	438.9750	U16 080399	33	Whakapoungakau Trig	ZL1PJ,ZL1BTB	45
Gisborne ATV	615.2500	Y18 477679	11	Kaiti Hill, Gisborne	ZL2TNP,ZL2AQS	1
New Plymouth 8475	438.4750	P19 996261	27	Hurford Road	ZL2BZH,ZL2RA	
Egmont 4025	434.0250	P20 037121	74	Mt Egmont	ZL2ARW,ZL2TRV	
Egmont 880	438.8000	P20 025095	54	East Egmont, Jackson's Lookout	ZL2AFE,ZL2AHI	
Egmont South MLS	1299.0000	P20 037121	74	Mt Egmont	ZL2ARW,ZL2TRV	4
Egmont North MLS	1299.5000	P20 037121	74	Mt Egmont	ZL2ARW,ZL2TRV	4
Erin ULS 405	434.0500	R21 671610	25	Mt Erin	ZL2BDQ,ZL3DK	4
Cambridge 8525	438.5250		04	Ruru	ZL1TTC,ZL1UMH	
Taihape 865	438.6500	T21 446632	23	Cleavers Hill	ZL2WJA,ZL2TRY	
Hawkes Bay 905	439.0500	V21 444684	25,13	Te Mata Peak	ZL3DK,ZL2IA	4
Tapuae 8575	438.5750	T22 425311	70	Tapuae	ZL2FX,ZL2UKW	
Hawkes Bay 870	438.7000	V22 452597	25,13	Te Mata Peak	ZL3DK,ZL2BDQ	4
Hawkes Bay 900	439.0000	V22 452597	25,13	Te Mata Peak	ZL3DK,ZL2IA	4
Hawkes Bay ATV	615.2500	V22 452597	13	Te Mata	ZL2MQ,ZL2BDQ	1
Whariti West 9025	439.0250	T23 481010	06	Wharite	ZL2VL,ZL2ARW	4
Wharite East 9050	439.0500	T23 481010	06	Wharite	ZL2VL,ZL2ARW	4
Tararua 910	439.1000	T23 481010	06	Wharite	ZL2VL,ZL2SK	4
Manawatu UHF Data 920	439.2000	T23 481010	20	Wharite	ZL2VL,ZL2SK	2
Wharite ATV	615.2500	T23 481010	20	Wharite	ZL2AUB,ZL2VL	1
Manawatu 8525	438.5250	T24 418852	20	Pahiatua track	ZL2BFR,ZL2AUB	
Linton UHF Data	439.3500	S24 294776	70	Scotts Road	ZL2TCA,ZL2TAI	2
Kapiti 885	438.8500	R26 875374	69	Mt Field	ZL2TFP,ZL2TUV	
Tasman Bay ATV	615.2500	N26 983203	24	Takaka Hill	ZL2ASF	1
Kapiti ATV	615.2760	R26 794310	69	Paraparaumu	ZL2TFP,ZL2TUV	1
North Climeie	433.9500	S27 901048	74	North Climeie	ZL2ARW,ZL2TAR	4
Saddle Hill 405	434.0500	O27 461922	26	Saddle Hill	ZL2BCA	45
Wellington 850	438.5000	R27 602885	74	Mt Victoria	ZL2BAC,ZL2TRV	
Colonial Knob 855	438.5500	R27 614043	74	Colonial Knob	ZL2ARW,ZL2TRV	
Climeie 860	438.6000	R27 898041	63	Mt Climeie	ZL2BIR	
Wairarapa 8875	438.8750	T27 389087	46	Parawhariki	ZL2BFI,ZL2UCW	
Nelson 890	438.9000	O27 366886	26	Fringed Hill	ZL2BCA	
Belmont ULS	438.9500	R27 668011	74	Belmont	ZL2ARW,ZL2TAR	4
Pariwhariki ULS	438.9500	T27 389077	74	Pariwhariki	ZL2ARW,ZL2TAR	45
Belmont link	438.9750	R27 668011	74	Belmont	ZL2ARW,ZL2TRV	4
Belmont 900	439.0000	R27 668011	74	Belmont	ZL2ARW,ZL2TRV	
Belmont link	439.0250	R27 668011	74	Belmont	ZL2ARW,ZL2TRV	4
Nelson 9075	439.0750	O27 366886	26	Fringed Hill	ZL2BCA	4
North Climeie ATV	443.2500	S27 901048	74	North Climeie	ZL2TAR,ZL2ARW	1

Name	Frequency (MHz)	InfoMap260	Branch	Location	Trustees	Notes
Belmont ATV	615.2500	R27 668011	74	Belmont	ZL2ARW,ZL2TAR	1
Belmont South MLS	1258.5000	R27 668011	74	Belmont	ZL2ARW,ZL2TRV	4
Belmont North MLS	1259.0000	R27 668011	74	Belmont	ZL2ARW,ZL2TRV	4
Wellington 120	1271.2000	R27 603887	74	Mt Victoria	ZL2ARW,ZL2TRV	
Wellington 150	1291.5000	R27 614043	74	Colonial Knob	ZL2ARW,ZL2TRV	
North Climie ATV	1277.2500	S27 901048	74	North Climie	ZL2TAR,ZL2ARW	1
Westport 855	438.5500	L29 140440	62	Mt Frederick	ZL2ULS,ZL3VC	5
Murchison Link	449.7375	M29 682416	26	Mt Murchison	ZL2BCA	4
Blue Duck 3975	433.9750	P31 753892	74	Blue Duck	ZL2ARW,ZL2TRV	4
Greymouth 8575	438.5750	K31 733651	49	Sewell Peak	ZL3TY,ZL3ADH	
Blue Duck South MLS	1298.0000	P31 753892	74	Blue Duck	ZL2ARW,ZL2TRV	4
Blue Duck North MLS	1298.5000	P31 753892	74	Blue Duck	ZL2ARW,ZL2TRV	4
North Canterbury 870	438.7000	M33 602152	68	Mt Noble	ZL3MJS,ZL3QR	
Cass Peak 850	438.5000	M36 793309	56	Cass Peak	ZL3ACS,ZL3ADL	
Marleys Hill ULS	438.9750	M36 801322	74	Marleys Hill	ZL2ARW,ZL2TRV	4
Christchurch 900	439.0000	M36 801322	74,05	Marleys Hill	ZL3ADF,ZL2ARW	
Christchurch ATV	615.2500	M36 891242	05	Cashmere Hill	ZL3ADF	1
Marleys Hill North MLS	1258.0000	M36 801322	74	Marleys Hill	ZL2ARW,ZL2TRV	4
Timaru 885	438.8500	J37 559434	34	Mt Horrible	ZL3MN	
South Canterbury ATV	615.2240	J40 452148		Mt Studholme		
Waitaki 4025	434.0250	J40 452148	34,64	Mt Studholme	ZL3MN	4
Oamaru 865	438.6500	J41 495667	64	Oamaru	ZL4SF,ZL4SN	
Queenstown Link Access	431.0000	I44 231775	30	Karetai Road, Highcliff	ZL4PZ	4
Dunedin -> North link	439.0250	I44 199854	30	Mt Cargill	ZL4PZ	4
Mt Cargill 905	439.0500	I44 199854	30	Mt Cargill	ZL4PZ	4
Dunedin 915	439.1500	I44 199854	30	Mt Cargill	ZL4PZ	
Invercargill 870	438.7000	E46 523116	37	Civic Admin. Bldg. Esk St.	ZL4OX,ZL4TFJ	
Invercargill 890	438.9000	E46 528108	37	Branch 37 Clubrooms	ZL4OX,ZL4TFJ	

All UHF repeaters have offset of -5MHz, except for some National System access repeaters (eg Kaimai 3975, Egmont 4025) that have a +5MHz split.

Notes:

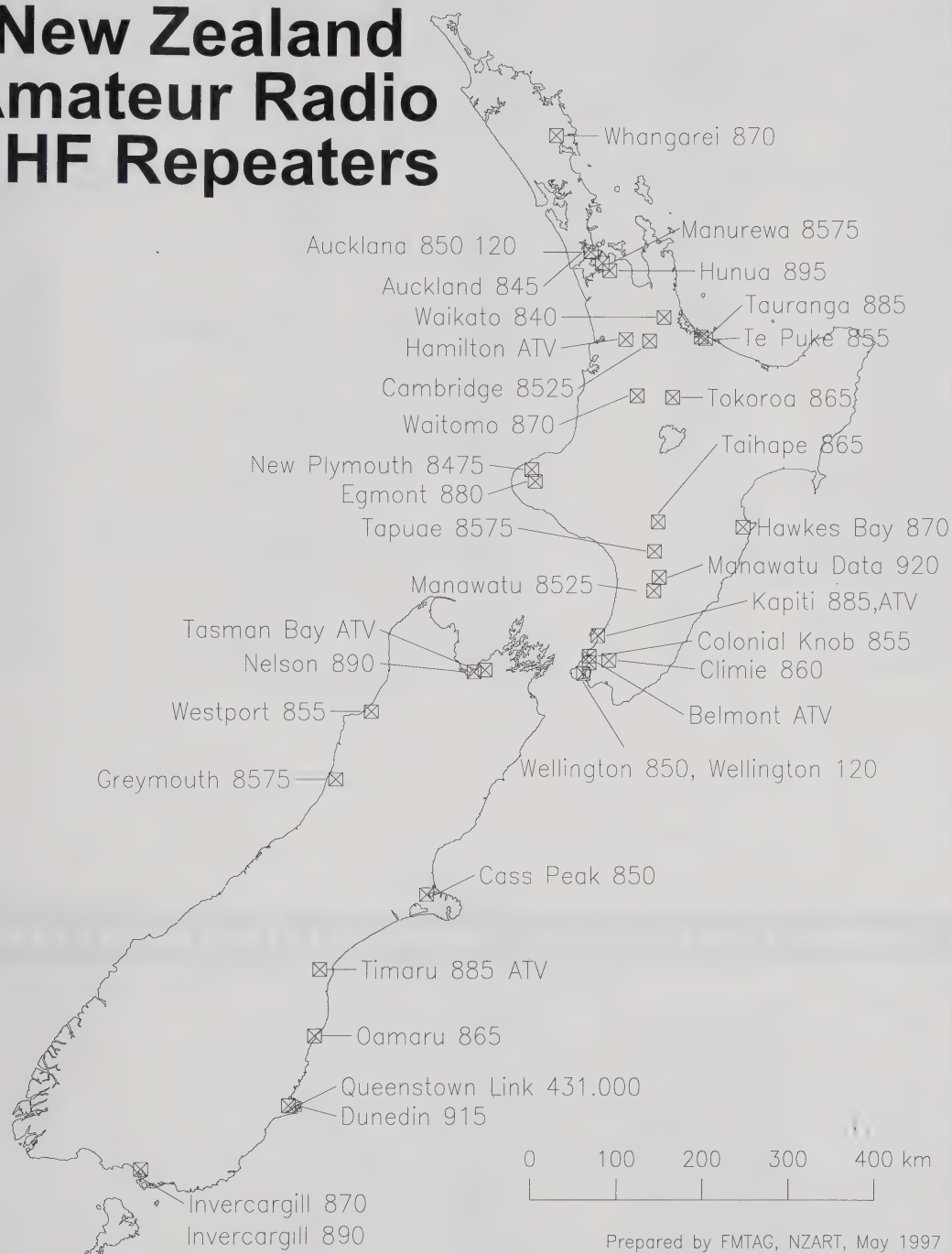
1. ATV repeater
2. Data repeater
3. Voice/data repeater shared under a local arrangement
4. Linked Repeater
5. Solar powered (take care with use !)

DIGIPEATERS

The following are digipeaters using AX.25 that have been coordinated through NZART.

Name	Frequency (MHz)	InfoMap260	Branch	Location	Trustees
North Shore AX25 BBS	144.6500	R10 684921	29	Castor Bay, North Shore	ZL1ABS,ZL1AUW
North Shore AX25	1296.6500	R10 684921	29	Branch 29 Clubrooms	
ZL1AVQ	438.3000	R11 687817	66	University of Auckland	ZL1DDL,ZL1TDA
Bay of Plenty AX25	144.6500	U14 784830	39	Mt Minden	ZL1BJP,ZL1AFC
Rangitoto AX25	144.6500	S16 214123	81	Rangitoto	ZL1UAB,ZL1AMW
Taumarunui AX25	144.6500	S18 015553	38	Kururau	
Taupo AX25	144.6500	U17 736942	60	Mt Maroanui	ZL1BVO,ZL1UFV
Hawkes Bay AX25	144.6500	R21 671610	13,25	Kahuranaki	ZL2IA,ZL2BDQ
Gisborne AX25	144.6500	X18 095574	11	Whakapunaki	
Tararua AX25	144.6500	T23 481010	06	Wharite	ZL2VL,ZL1AFZ
Kapiti AX25	144.6500	R26 875374	69	Mt Field	ZL2TFP,ZL2TUV
Blenheim AX25	144.6500	P28 026586	22	Jamie's Knob	ZL2BK,ZL2IW
Nelson AX25	144.6500	S33 173092	26	Takaka Hill	ZL2BCA
Greymouth AX25	144.6500	K31 736658	49	Sewell Peak	ZL3TY
Mt Murchison AX25	144.6500	M29 682416	49	Mt Murchison	ZL3TY
Kaikoura AX25	144.6500	O31 676646	76	Kaikoura	ZL3PZ,ZL3GF
Christchurch AX25	144.6500	M36 801322	05	Marleys Hill	ZL3ADF
Timaru AX25	144.6500	J40 452148	34	Mt Studholme	ZL3MN
Queenstown AX25	144.6500	F41 790626	75	Double Cone	ZL4JW,ZL4TIQ
Dunedin AX25	144.6500	I44 231778	30	Karetai Road, Highcliff	ZL4PZ
Gore AX25	144.6500	F45 015479	08	Pukerau Hill	ZL4AO,ZL4TCD

New Zealand Amateur Radio UHF Repeaters



Prepared by FMTAG, NZART, May 1997

AMATEUR RADIO BEACONS

Beacons are shown in ascending frequency order, and were believed to be operational at the time of writing.

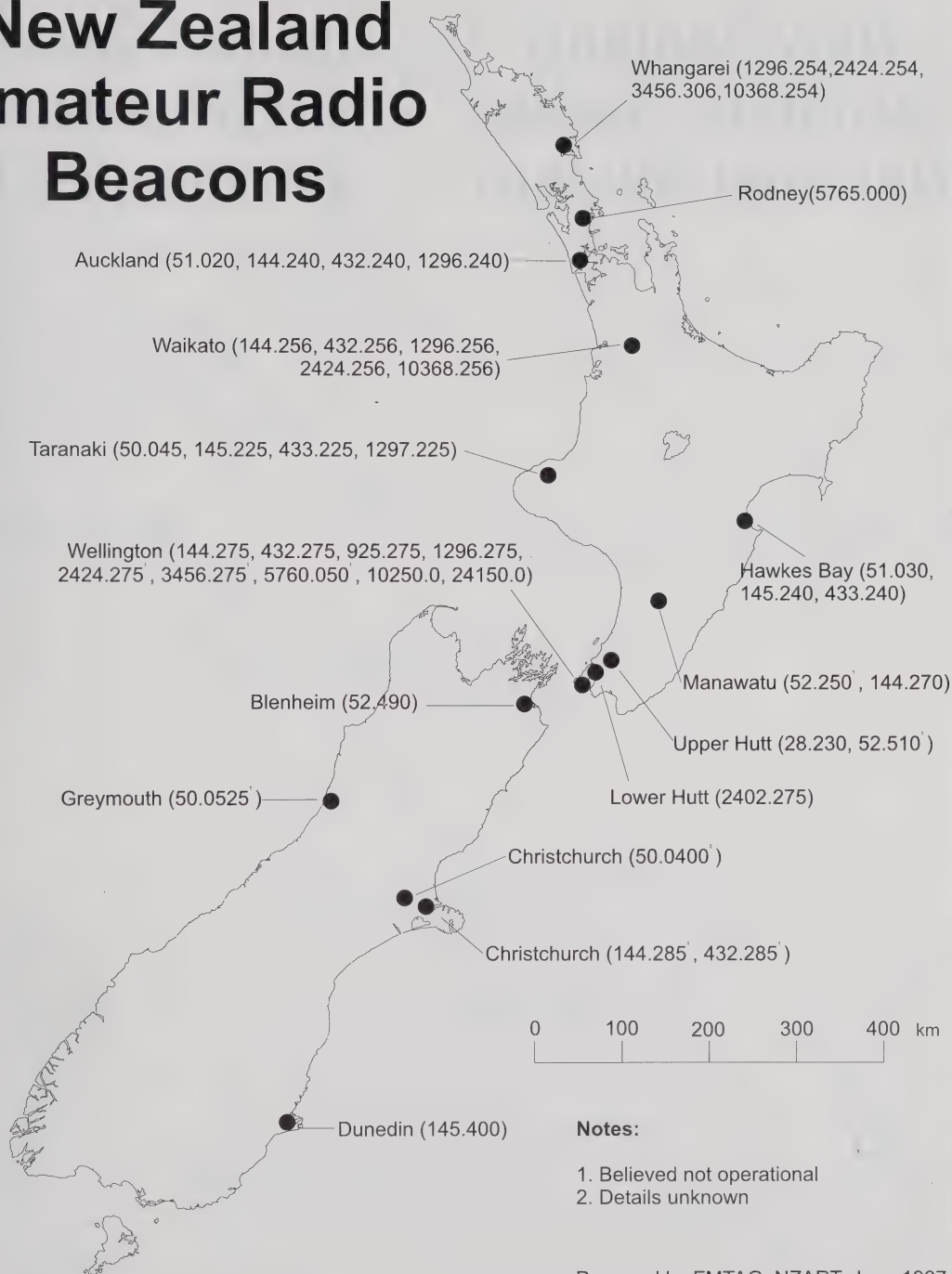
Name	Frequency (MHz)	Status	InfoMap260	Branch	Location	Trustees
Whangarei 3cm	10368.2540		Q06 266150	28	Parakioro	ZL1WB,ZL1UOH
Whangarei 10cm	3456.3060		Q06 266150	28	Parakioro	ZL1WB,ZL1UOH
Whangarei 12cm	2424.2540		Q06 266150	28	Parakioro	ZL1WB,ZL1UOH
Whangarei 23cm	1296.2540		Q06 266150	28	Parakioro	ZL1WB,ZL1UOH
Rodney 6cm	5765.0000		R09 473275	71	Kaipara Hills	ZL1TBG
Auckland 6m	51.0200		R11 502736	66	Nihotupu	ZL2TOD
Auckland 2m	144.2530		R11 502736	66	Nihotupu	ZL2TOD
Auckland 70cm	433.2530		R11 502736	66	Nihotupu	ZL2TOD
Auckland 23cm	1296.2530		R11 502736	66	Nihotupu	ZL2TOD
Waikato 2m	144.2560		S14 111765	81	Hamilton City	ZL1THG,ZL1TAT
Waikato 70cm	432.2560		S14 111765	81	Hamilton City	ZL1THG,ZL1TAT
Waikato 23cm	1296.2560		S14 111765	81	Hamilton City	ZL1THG,ZL1TAT
Waikato 12cm	2424.2560		R15 835684	81	Te Uku	
Waikato 10GHz	10368.2560		R15 835684	81	Te Uku	
Hawkes Bay 6m	51.0300		V21 455763	13	Napier	ZL2IA
Hawkes Bay 2m	145.2400		V21 455763	13	Napier	ZL2IA
Napier 70cm	433.2400		V21 455763	13.25	Napier city	ZL2IA,ZL2BDQ
Manawatu 6m	52.2500		S24 880293	20	The clubrooms, Totara Rd, P.North	ZL2FX,ZL2RW
Manawatu 2m	144.2710		T24 418852	20	North Range Road	ZL2FX,ZL2RW
Upper Hutt 10m	28.2300		R27 898041	63	Mt Climie	ZL2BIR
Upper Hutt 6m	52.5100		R27 898041	63	Mt Climie	ZL2BIR
Lower Hutt 12cm	2402.2750		R27 842346	18	Lower Hutt	ZL2TWS,ZL2UKV
Wellington 2m	144.2750		R27 560848	74	Hawkins Hill	ZL2BAC,ZL2TRV
Wellington 70cm	432.2750		R27 560848	74	Hawkins Hill	ZL2BAC,ZL2TRV
Wellington 32cm	925.2750		R27 668011	74	Belmont	ZL2ARW,ZL2TRV
Wellington 23cm	1296.2750		R27 560848	74	Hawkins Hill	ZL2BAC,ZL2TRV
Colonial Knob 12cm	2424.2750		R27 614043	74	Colonial Knob	ZL2BAC,ZL2TAR
Colonial Knob 9cm	3456.2750		R27 614043	74	Colonial Knob	ZL2BAC,ZL2TAR
Wellington 5cm	5760.0500		R27 668011	74	Belmont	ZL2ARW,ZL2TRV
Wellington 3cm	10250.0000		R27 560848	74	Hawkins Hill	ZL2BAC,ZL2TRV
Wellington 1.2cm	24150.0000		R27 560848	74	Hawkins Hill	ZL2BAC,ZL2TRV
Blenheim 6m	52.4900		P28 883627	22	Blenheim	ZL2IW,ZL2BK
Greymouth 6m	50.0525		J31 632602	49	Greymouth	ZL3TY
Christchurch West 6m	50.0430		M35 506415	56	Aylesbury	ZL3ACS,ZL3ADL
Christchurch 2m	144.2850		M36 820370	05	Huntsbury Hill	ZL3ADF
Christchurch 70cm	432.2850		M36 820370	05	Huntsbury Hill	ZL3ADF
Dunedin 2m	145.4000		I44 198776	30	Highcliff Road	ZL4PZ

SHORT TERM SPECIAL PURPOSE (STSP) REPEATERS

These repeaters are used by the stated Branches for special events and emergency use.

Name	Frequency (MHz)	Branch	Trustees
Hamilton STSP 5325	145.3250	12	
Hamilton STSP 5375	145.3750	12	
Horowhenua STSP 5475	145.4750	16	
Alexandra STSP 6625	146.6250	61	
Rodney STSP 6675	146.6750	71	5
Rotorua STSP 6675	146.6750	33	
Upper Hutt STSP 6675	146.6750	63	
Taumarunui STSP 6725	146.7250	38	
Masterton STSP 6725	146.7250	46	5
Auckland STSP 6825	146.8250	65	
Whakatane STSP 6825	146.8250	51	
Manawatu STSP 6825	146.8250	20	
Tararua STSP 6825	146.8250	06	
Papakura STSP 6875	146.8750	65	
Wellington STSP 6875	146.8750	74	
Hawkes Bay STSP 6925	146.9250	25	
Nelson STSP 6925	146.9250	26	
Christchurch STSP 7275	147.2750	05	
Auckland STSP 875	438.7500	65	

New Zealand Amateur Radio Beacons

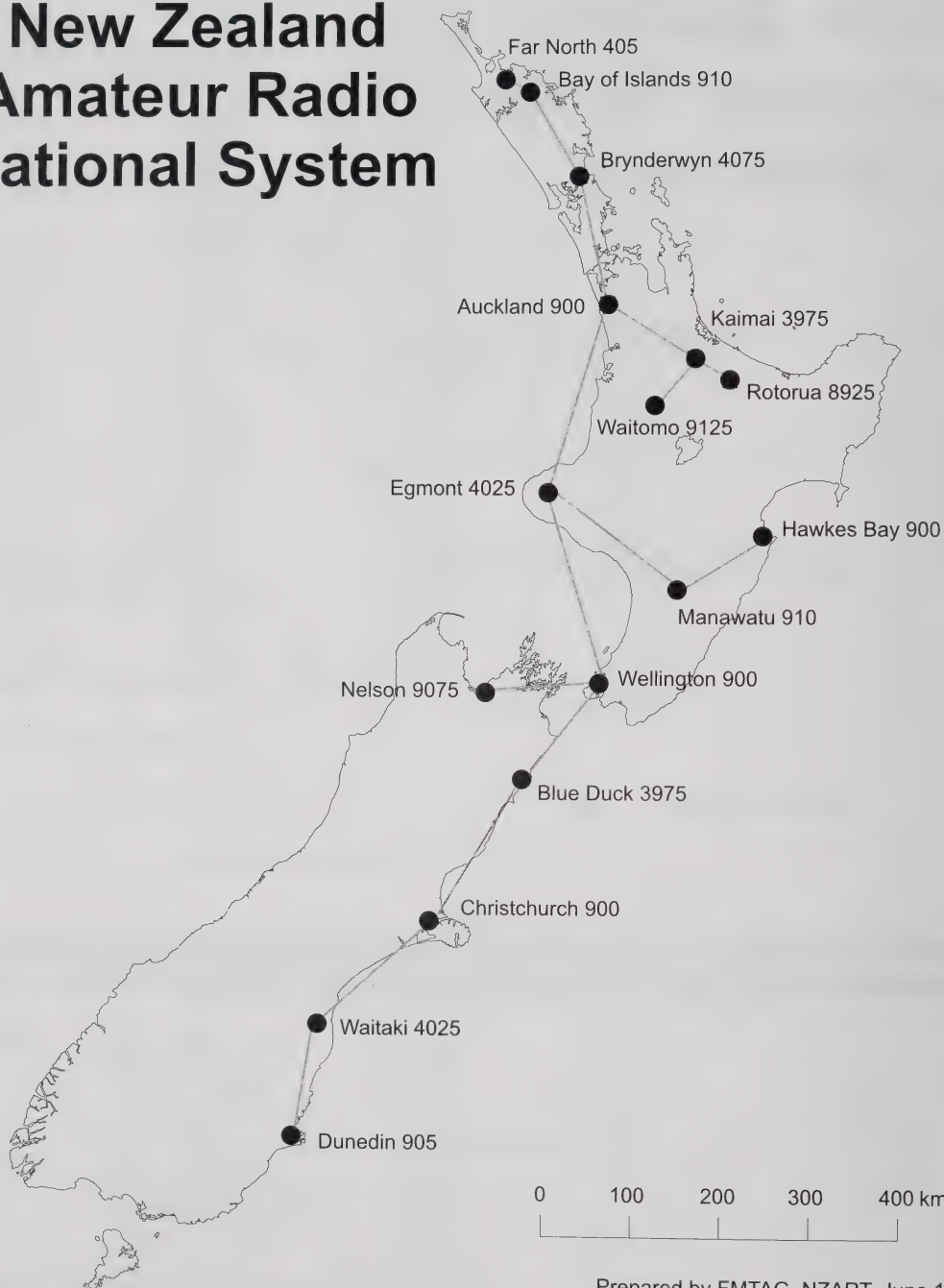


Notes:

1. Believed not operational
2. Details unknown

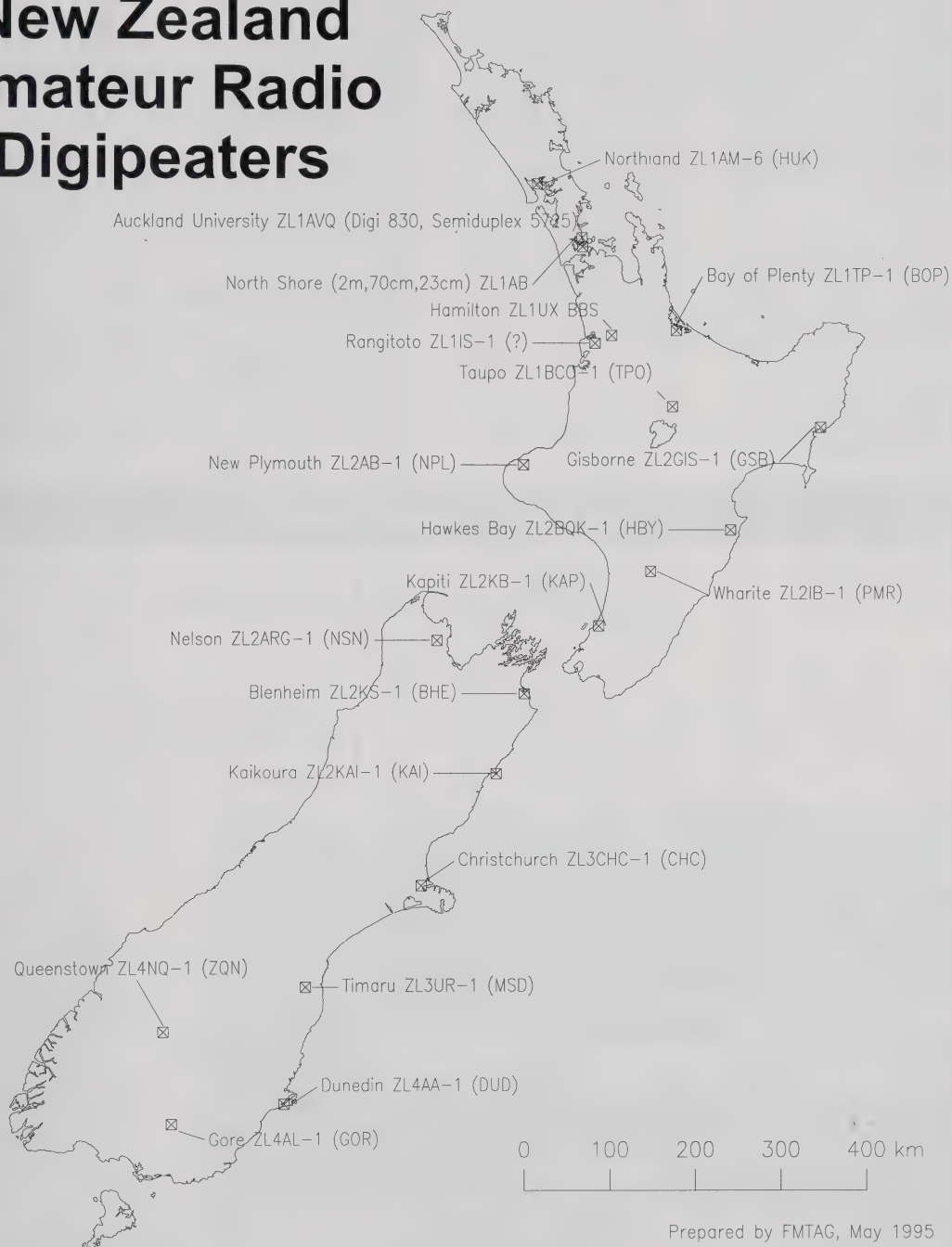
Prepared by FMTAG, NZART, June 1997

New Zealand Amateur Radio National System



Prepared by FMTAG, NZART, June 1997

New Zealand Amateur Radio Digipeaters



SIMPLEX AND CALLING FREQUENCIES

144.100 Oceania SSB Calling
 144.200 NZ SSB Calling
 144.500 FM Calling
 144.600 Primary Data/Packet Store/Forward. Linked National Link
 144.625 Secondary Data/Packet Store/Forw. Linked National Link
 144.650 Primary Local Data/Packet Store/Forward
 144.675 Secondary Local Data/Packet Store/Forward
 145.250 FAX
 146.425 to 146.600 FM SIMPLEX
 147.400 to 147.600 FM Simplex
 147.500 Tertiary Local Data/Packet Store/Forward

432.200 SSB Calling
 432.500 FM Calling
 432.600 Primary Data/Packet Store/Forward. Linked National Link
 432.625 Secondary Data/Packet Store/Forw. Linked National Link
 432.650 Primary Local Data/Packet Store/Forward
 432.675 Secondary Local Data/Packet Store/Forward
 438.300 Tertiary Local Data/Packet Store/Forward

621.200 SSB Calling
 621.500 FM Calling
 621.600 Primary Data/Packet Store/Forward. Linked National Link
 621.625 Secondary Data/Packet Store/Forw. Linked National Link

621.650 Primary Local Data/Packet Store/Forward
 621.675 Secondary Local Data/Packet Store/Forward

925.200 SSB Calling
 925.500 FM Calling
 925.600 Primary Data/Packet Store/Forward. Linked National Link
 925.625 Secondary Data/Packet Store/Forw. Linked National Link
 925.650 Primary Local Data/Packet Store/Forward
 925.675 Secondary Local Data/Packet Store/Forward

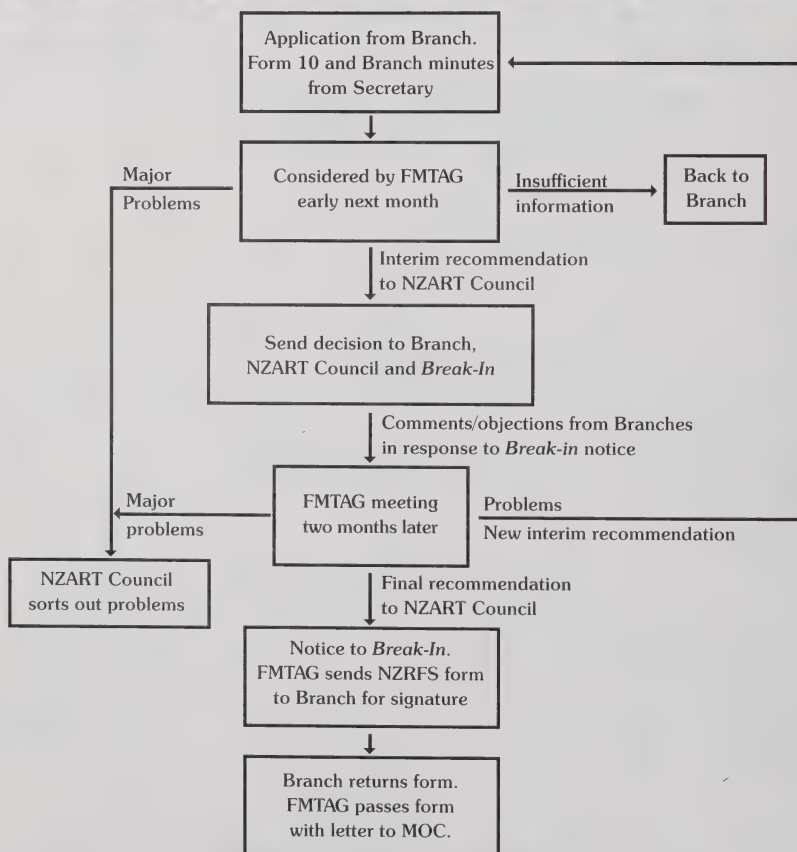
Above 1 GHz, use the following as a guide to designated frequencies:

F to F+1 MHz for standard narrow band or weak signal segment, where F = 144, 432, 621, 925, 1296, 2424, 3456, 5760, 10368, 24192, 47088, 80640 MHz.

F+0.20 SSB calling
 F+0.25 to 0.30 Beacons (geographic plan)
 F+0.50 FM calling
 F+0.60 Primary data/packet—linked to national system
 F+0.625 Secondary data/packet—linked to national system
 F+0.65 Primary local data/packet
 F+0.675 Secondary local data/packet.

There may be additional designated frequencies in this segment in some bands.

FMTAG PROCEDURE



Time and Frequency

Review of Timekeeping in New Zealand

Timekeeping began in New Zealand in 1862, when Captain Stephen Carkeek, Controller of Customs, recommended to the Superintendent of Wellington Province that a transit instrument, an astronomical clock, and a time ball be placed in the new Custom House which was to be erected on what eventually became the site of the General Post Office.

A transit instrument allows mean local time to be calculated. This is the time appropriate to the longitude of the point of measurement, relative to the Greenwich Meridian, allowing four minutes per degree of longitude, or one hour per 15 degrees. It was not until 1868 that the General Government proclaimed a uniform time for New Zealand based on the meridian 172° 30' East. The advent of the telegraph had made rapid communications possible and therefore the concept of a uniform time feasible without the need for observations in every town and port. New Zealand was in fact the first country to establish a uniform time by legislation, and its scientists played an important role in establishing uniform time zones in certain other countries.

A new Colonial observatory was built in Wellington in 1869 in the Bolton Street Cemetery, on the site where the Richard John Seddon memorial now stands. Seddon's death in 1906, and the choice of the site for the memorial, precipitated the move of the Observatory to its present site in the Botanical Gardens in Kelburn. A small red brick building was erected on the site of the old Gardens Battery. It was completed in 1907 and became known as the Hector Observatory, after Sir James Hector, who had been Director of the Colonial Observatory.

Experiments with radio time signals began in 1916, with the reception of signals from Melbourne and transmission to ships in the vicinity of New Zealand and to Tahiti. Other regular services were established in 1919.

In 1926 the Department of Scientific and Industrial Research was formed, and became responsible for the Time Service. Although precision in time signals of a quarter of a second was claimed until the 1950s, the actual errors were often greater than this. The Geophysics Division of the DSIR was formed in 1951, and took over administrative responsibility for the Time Service. It was not until 1962, however, that any real advances were made. Clocks which used the very stable electrical oscillations of quartz crystals were installed. Checks were made reg-

ularly against radio time signals from overseas which were obtained from astronomical observations, and appropriate corrections were made for the propagation time to Wellington.

In 1987 responsibility for the Time Service passed to the Physics and Engineering Laboratory, DSIR, and was relocated from Kelburn in Wellington to Gracefield, Lower Hutt. In 1992 when the DSIR was disestablished and its responsibilities taken over by Crown Research Institutes, the Time Service remained at Gracefield but became the responsibility of the Measurement Standards Laboratory of New Zealand (MSL), part of Industrial Research Limited.

UTC and UT1

Since 1967 the world's time has been related to an even more stable clock than our rotating earth—the vibrations of the caesium atom. Each element has its characteristic frequency of vibration, such as that of sodium which gives us the familiar orange colour of highway lighting. Although the characteristic frequency of caesium is particularly stable, a caesium clock on its own does not constitute a time standard. Rather, information from caesium clocks maintained by standards laboratories around the world is collated by the Bureau International des Poids et Mesures (BIPM) in Paris to provide Co-ordinated Universal Time (UTC). As with the old Greenwich Mean Time, UTC is the time at zero degrees longitude.

Because the rate of rotation of the earth is not constant, differences

between mean solar time (UT1) and the atomic time (UTC) accrue which in time could become inconvenient. It is therefore necessary to make periodic adjustments to the atomic scale so that it roughly approximates UT1. At the beginning of 1972 the cumbersome "variable length second" used to adjust atomic time was replaced by the "leap second concept". UTC was set up to be slightly fast, so that a "leap second" could be added on the first day of January or July when necessary, but would not be expected to average more than one a year. An adjustment was made on July 1, 1994 of one second so that the atomic time scale has now been incremented by 28 seconds since 1972. The atomic time scale is thus at all times within ± 0.7 seconds of mean solar time. The difference between UT1 and UTC, known as DUT1, is encoded and broadcast by time and frequency stations.

The New Zealand Time and Frequency Standard

The New Zealand time standard is maintained by means of three caesium clocks. Linkage to the BIPM is via the Global Positioning Satellite system which give accuracies of better than 100 nanoseconds. The satellite system is also utilized to transfer the MSL atomic time to the BIPM to be included in the ensemble of clocks used to calculate the international atomic time scale.

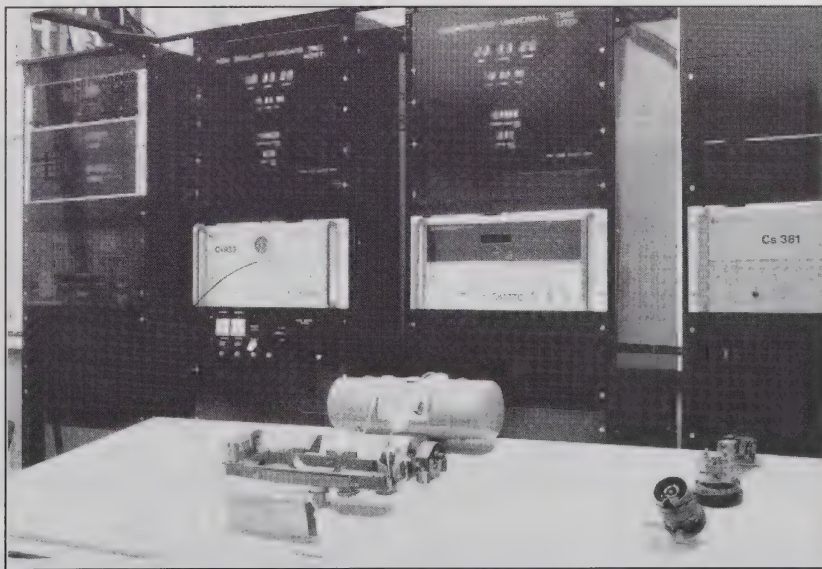
The time standard is also New Zealand's frequency standard, accurate to parts in 10^{15} . Standard frequency dissemination to New Zealand

users is via the TV1 and TV2 television transmissions. The colour burst frequencies of these transmissions are controlled by rubidium oscillators which are monitored against the MSL caesium clocks, and are usually within 10^{11} of the nominal colour burst frequency of 4.43361875 MHz. The highest accuracies, approaching one part in 10^{12} , are obtained by comparing the timing of selected synchronization pulses with results obtained at MSL.

The most widely used time signals in New Zealand are those generated by MSL, for broadcast by Radio New Zealand. Some private radio stations also broadcast the time signals. These signals are transmitted every hour and consist of six "pips" of 1000 Hz tone, at one second intervals, the beginning of each pip marking the exact second. When a pip marks the exact hour, its length is doubled. The precision with which the beginning of the long pip marks the exact hour is usually less than $10 \mu\text{s}$ as it leaves MSL. Delays along telephone lines to Radio New Zealand and in radio propagation to the remote parts of New Zealand can amount to a few milliseconds. When it is necessary to insert a leap second, seven pips are broadcast.

Talking Clock

MSL operates a talking clock which is made available to the New Zealand public via the Telecom NZ 0900 service for a standard charge, currently 80 cents per call from anywhere in New Zealand. On dialling 0900 45-678 to access the talking



The New Zealand Caesium Clock installation.

clock, the user receives a voice announcement of the time followed by three "pips" of 1000 Hz tone. The start of the third pip is the exact time. The announcement and pips are repeated at 10 second intervals to give six time announcements in all, ensuring that the full minute is always included. The accuracy of the talking clock is limited by the propagation delays of the telephone network which would not normally exceed 30 mS for the remotest parts of New Zealand.

MSL has recently developed a dial-up time service for computers. On dialling the service (0900-45-222) using a 1200 baud modem, a series of time strings is transmitted which contain the current time and date for both New Zealand time and UTC time, and an on-time marker. Warning is provided of forthcoming leap seconds and daylight saving changes. The accuracy of the system is limited by propagation delays in the telephone network and scrambler delays in the modems to around 100 mS. Software for IBM-compatible PCs to access the system automatically is available from MSL.

WWV and WWVH

The National Institute of Standards and Technology (NIST) broadcasts standard time and frequency transmissions continuously through stations WWV and WWVH. Station WWV is located at Fort Collins, Colorado and broadcasts continuously on the radio frequencies of 2.5, 5, 10, 15 and 20 MHz. Station WWVH is located at Kauai, Hawaii and broadcasts continuously on the radio frequencies of 2.5, 5, 10 and 15 MHz.

Both stations are controlled by caesium atomic oscillators. The frequencies are stable to better than one part in 10^{11} at all times, compared with the primary atomic standards maintained at the NIST Boulder laboratories. Changes in the propagation medium cause fre-

quency changes which are several orders greater than the uncertainties described above.

Seconds pulses are transmitted continuously, even during tones and announcements, and are derived from the same oscillator which generates the carrier frequency. Seconds pulses comprise five cycles of 1000 Hz tone for WWV and six cycles of 1200 Hz tone for WWVH. Each minute, except the first of the hour, begins with an 800 mS tone of 1000 Hz at WWV and 1200 Hz at WWVH. Each pulse is preceded by 10 mS of silence and followed by 25 mS of silence. The first minute of the hour begins with an 800 mS tone of 1500 Hz from both stations.

At WWVH, time announcements are made by a female voice in the period 45 seconds to 52.5 seconds after each minute, while at WWV a male voice announces the time in the last 7.5 seconds of each minute. All time announcements are referred to in terms of UTC as maintained by the NIST. The 0 to 24 hours system is used. The first two figures give the hour and the last two figures give the minutes past the hour when the tone returns. The time announcement refers to the end of an announcement interval, ie, to the time when the 0.8 second long audio tone begins. At 1035 UTC for instance, the voice announcement, given in English, is: "At the tone, ten hours thirty-five minutes Co-ordinated Universal Time".

Standard audio frequencies of 440 Hz, 500 Hz and 600 Hz are broadcast by the two stations. The duration of each transmitted tone is approximately 45 seconds. A 600 Hz tone is broadcast by WWV during odd minutes and during even minutes by WWVH. A 500 Hz tone is broadcast during alternate periods unless voice announcements or silent periods are scheduled. The 440 Hz tone is broadcast beginning one minute after the hour at WWVH and two minutes after the hour at

WWV. The 440 Hz tone is omitted during the first hour of the UTC day to act as a day marker. No audio tones or special announcements are broadcast during a semi-silent period from either station. The periods are from 45 to 50 minutes after the hour from WWV and from 15 minutes to 20 minutes after the hour at WWVH.

The method of coding the corrections (DUT1) to UTC to obtain UT1 uses a system of double second pulses. The first through eighth second pulse, when marked by a double pulse, will indicate a "plus" correction, and from the ninth through the fifteenth a "minus" correction. The amount of correction is determined by counting the number of second pulses which are doubled. For example, if the first, second and third second pulses are doubled, the correction is 0.3 seconds. Or if the ninth, tenth, eleventh, twelfth, thirteenth and fourteenth second pulses are doubled, the correction is "minus" 0.6 seconds.

A modified IRIG-H time code, giving the year, day of year, hour, minute, DUT1 value, and information on impending leap seconds and daylight saving (in the USA) is broadcast continuously on a 100 Hz sub-carrier.

A broadcast of radio propagation conditions and solar activity is broadcast in voice during part of every eighteenth minute of each hour from WWV. The announcements are short term forecasts, updated as required, every six hours if needed.

VNG

The Australian time and frequency station VNG is firmly back in operation on an ongoing basis from Llandilo, near Penrith in Sydney, and due to its close proximity to New Zealand, offers a more reliable source of time and frequency than other shortwave stations. Transmission frequencies are 2.5, 5, 8.638, 12.984 MHz on a continuous basis,

and at 16 MHz from 2200-1000 UTC. Transmitter powers are 1 kW at 2.5 MHz, 5 kW at 16 MHz, and 10 kW at the other frequencies. Station identification is given during the 15th, 30th, 45th and 60th minutes using voice on 2.5, 5, and 16 MHz, and Morse on 8.638 and 12.984 MHz. A talking clock operating on 2.5, 5 and 16 MHz gives the time in UTC each minute, immediately after the minute marker.

The VNG time code format comprises normal seconds markers of 50 mS duration 100 Hz tone, reduced to 5 mS in seconds 55-58, and omitted for the 59th second. The minute marker is 500 mS of 1000 Hz tone. During the fifth, 10th, 15th, etc minute, seconds markers 50-59 are 5 mS of 1000 Hz tone. DUT1 information is conveyed during the first 16 seconds of the minute by normal seconds markers emphasized by 50 mS of 900 Hz tone.

A time code complying with CCIR recommendations is broadcast between seconds marker 20 and seconds marker 46. It gives time of day (UTC) and day number of year in binary-coded-decimal form, with the minute coded between seconds 21-28, the hour between 28-35, and the day of year between 35-46. The code is valid for the next minute. Binary "0" is 100 mS duration, binary "1" is 200 mS duration, and parity check bits are given at 28, 35, and 46 seconds. Counting binary "ones" of each group plus the corresponding parity bit gives an even number.

For more information see "Keeping Australians in tune & on time", *Electronics Australia*, June 1993, pp. 26-29. Technical enquiries and reception reports can be directed to: Executive Director, National Standards Commission, 12 Lyonpark Road, PO Box 282, North Ryde NSW 2113, Australia.

A. C. Corney
Measurement Standards
Laboratory, Industrial
Research Limited

NZART

working for you

publications, videos, information



The Maritime Radio Service

Introduction

The Maritime Radio Service is a non-commercial operation, set up to provide all mariners with a 24-hour safety and distress network. VHF, MF/HF and Inmarsat C satellite services are provided. The extent of the service has been improved recently by providing VHF coverage to more of our coastline. The service is the responsibility of the Maritime Safety Authority who have contracted Broadcast Communications Ltd (BCL) to operate the service.

The Maritime Radio Service includes:

- Continuous watchkeeping on maritime distress calling frequencies on VHF, MF and HF (SSB) and Inmarsat C;
- Regular scheduled broadcasts of maritime safety information, including weather and navigational hazard information;
- Co-ordination with rescue authorities.

Coverage areas

The VHF service, being basically line of sight from the transmitter/receiver site, is aimed at the areas of greatest shipping or boating activity. VHF coverage will be provided 24 hours a day for the coastal sea areas around Northland Auckland, Bay of

Plenty, Hawke Bay, north Taranaki, Cook Strait, most of the South Island east coast, the northern half of the West Coast, and Foveaux Strait areas. See the coverage map. In future other areas may also be added as needs and finances dictate.

The MF/HF station, called Taupo Maritime Radio ZLM, is on an electrically quiet site near Taupo. It operates in skyway propagation. The MF/HF coverage is not as easy as VHF to define, as it is very dependant on propagation conditions which vary with time of day, ionospheric conditions and the sunspot cycle. However, the coverage will usually extend for at least a few hundred nautical miles beyond New Zealand's shores.

The Maritime Safety Authority provides coastal and oceanic warnings and weather bulletins on Inmarsat C. These broadcasts are coded such that all Inmarsat C-equipped ships within a circular area of 800 nautical miles radius centred on Nelson can receive the coastal broadcasts and the oceanic broadcasts can be received throughout Navarea XIV. (Navarea XIV is an area covering much of the Southern Pacific over which New Zealand has responsibility for providing maritime safety services.)

Frequencies

For all of the VHF Coast Stations, the distress and calling frequency Channel 16, is continuously monitored. The channels for working when contact has been established on Channel 16 are:

- Channel 67 for Northland (south), Taranaki (north) and Waitaki Maritime Radios.
- Channel 68 for Plenty, Napier, Picton, Paparoa (south), Akaroa and Bluff Maritime Radios.
- Channel 71 for Auckland and Wellington and Paparoa (north) Maritime Radios.

The frequencies for Taupo Maritime Radio ZLM are:

Table 1

Calling (kHz)	Working (kHz)
2182	2207
4125	4146
6215	6224
8291	8297
12290	12356
16420	16531

Broadcast schedules

The schedule of VHF broadcasts is shown in Table 2.

Table 3 shows broadcasts made on M/HF frequencies from Taupo Maritime Radio. A preliminary call is made on the calling frequencies shown below and the broadcasts are made on the working frequencies. All times are in New Zealand Standard Times (or New Zealand Daylight Time, where applicable).

Complementary services

In addition to the publicly provided Maritime Radio Service, around New Zealand there are many private coast stations run by individuals, clubs, associations and commercial concerns. Many of these stations keep regular watch on distress frequencies for parts of the day, some have broadcast schedules, and some provide additional commercial subscription services.

In a distress situation these stations will often provide communications for the rescue organizations in addition to the co-ordination provided by the Maritime Radio Service. Many stations cover areas of coast that are not covered by the public VHF stations and the local knowledge that these stations possess can be invaluable.

In designing the new radio service it was acknowledged that the private and public coast radio stations play

Table 2

Maritime Radio Station	Working Channel	Area of Forecast	Times
Northland	67 & 71	KAWHIA, MANUKAU, HOKIANGA, REINGA,	0703 1403 1903
Auckland	71	BRETT, COROMANDEL, PLENTY	
Plenty	68	& detailed forecast of the Hauraki Gulf	
Napier	68	CASTLEPOINT, KIDNAPPERS and NICK	0710 1410 1910
Taranaki	67	KAWHIA, FAREWELL, D'URVILLE, COOK and CLARENCE	0733 1433 1933
Wellington	71		
Picton	68		
Akaroa	68	CLARENCE, PEGASUS, RAKAIA, WAITAKI,	0720 1420 1920
Waitaki	67	CHALMERS and FOVEAUX	
Chalmers	71		
Bluff	68	MILFORD, PUYSEGUR, FOVEAUX and CHALMERS	0740 1440 1940
Paparoa	68&71	FOULWIND, FOX, MILFORD and PUYSEGUR	0750 1450 1950

Table 3

Broadcast type	Times	Frequencies (kHz)	
		Calling	Working
Coastal warnings and Bulletins (incl Chathams)	0203 0603	2812 4125 6215	2207 4146 6224
	1303 1203		
Coastal Reports	0803 1203	2182 4125 6215	2207 4146 6224
	2003		
Oceanic Warnings and Bulletins	1003 2103	6215 12290	6224 12365
	1033 2133	8291 16420	8297 16531
	0303 1503	6215 12290	6224 12365
Oceanic Warnings	0333 1533	8291 16420	8297 16531

complementary roles in providing safety coverage around New Zealand coastal seaways.

Tables of frequencies/ channels

Medium and High Frequency (M/HF)

2182 kHz

An international distress, safety and calling frequency for radio-telephony.

All ships licensed to operate in the marine frequency bands between 1605 kHz and 2850 kHz must be able to transmit and receive on 2182 kHz. Distress, urgency and safety calls should be made on this frequency.

It is also the general calling and reply frequency when establishing communication with ship and coast stations and for use by coast stations to announce the transmission on other fre-

quencies of safety information and lists of messages on hand.

Except for distress and urgency, all other communications should be carried out on a working or inter-ship frequency, leaving 2182 kHz available for such calls. Safety traffic should also be transmitted on a working frequency.

2045 kHz

Supplementary calling frequency.

2068 kHz 2456 kHz 2638 kHz

Inter-ship working frequency for use after communication has been established on 2182 kHz or 2045 kHz.

2012 kHz 2162 kHz

Harbour authority working frequency.

2480 kHz 2444 kHz

Working frequencies for exchanging messages between

private coast stations and ships after communication has been established on 2812 kHz or 2045 kHz.

2089 kHz 2129 kHz

For communication with coast stations providing communication for aquatic sporting events. These frequencies may also be used by land stations providing communications for sporting events.

4125 kHz

An international distress, safety and calling frequency.

4146 kHz 4417 kHz

Working frequencies between coast and ship stations, or inter-ship, after initial contact has been established on 4125 kHz.

6215 kHz

An international distress, safety and calling frequency.

6224 kHz 6227 kHz

Working frequencies between coast and ship stations, or inter-ship, after initial contact has been established on 6215 kHz.

8291 kHz

International distress, safety and calling frequencies only.

8255 kHz

International call frequency only.

12290 kHz 16420 kHz

International distress, safety and calling frequencies.

2208 kHz 4146 kHz 6224 kHz 8297 kHz 12356 kHz 16531 kHz

Working frequencies for exchanging messages between Taupo Maritime Radio and ships after communication has been established on a calling frequency.

VHF

Ch 16

The international distress, safety and calling frequency for the maritime mobile VHF radio-telephone service.

All ships stations licensed for operation in the authorized bands between 156 MHz and 174 MHz must be able to transmit and receive on this channel.

Ch 6, Ch 8

For inter-ship working.

Ch 9, Ch 10, Ch 11, Ch 12, Ch 13, Ch 14

Working channel for harbour authority radio stations on port operation and ship movements.

Ch 21, Ch 23

Continuous weather transmission channel.

Ch 2, Ch 24, Ch 25, Ch 26, Ch 27

For connection to the public telephone network.

Ch 1, Ch 3, Ch 4, Ch 5, Ch 60, Ch 61,

Ch 62, Ch 63, Ch 64, Ch 65, Ch 66

Two-frequency talk-through repeater channels.

Ch 67

Working channel for NORTH-LAND, TARANAKI and WAITAKI MARITIME RADIOS.

Ch 68

Channel for use by "rescue" organizations. Also working channel for PLENTY, NAPIER, PICTON, AKAROA, PAPAROA and BLUFF MARITIME RADIOS.

Ch 71

Working channels between coast and ship stations after initial contact has been made on channel 16. Also working channel for NORTH-LAND, AUCKLAND, WELLINGTON, PAPAROA and CHALMERS MARITIME RADIOS.

Ch 73

Channel for use in association with marina developments.

Ch 74

Working channels between coast and ship stations after initial contact has been made on Channel 16.

Ch 17, Ch 77

Channels available for aquatic events.

Ch 84, Ch 85, Ch 86, Ch 87,

Ch 88

Repeater channel for Search and Rescue communications.

Distress, Urgency and Safety Calls

Special calls are used in cases of distress, urgency and safety and it is important they are properly understood and correctly used.

Distress

The radio-telephone distress signal MAYDAY is used to indicate that a ship is threatened by grave and imminent danger and requires IMMEDIATE assistance.

Urgency

The radio-telephone urgency signal PAN PAN is used to indicate that a ship has a very urgent message to transmit concerning its safety.

Safety

The radio-telephone safety signal SECURITE (pronounced SAY-CUR-E-TAY) is used to indicate that the calling station has an important navigational or meteorological warning to transmit.

**AT SEA
SAFETY
IS
NO
ACCIDENT

CHECK
YOUR
EQUIPMENT**



**Maritime
Safety Authority**

Te Mana Arai Hauata Moana

NOTES:

1. 24 hr/day SOLAS (Safety of Life at Sea) listening watch is kept by all coastal maritime stations on VHF Channel 16 (distress and calling frequency).
2. New wind warnings are issued on receipt and thereafter at scheduled broadcast times.
3. See relevant table for Forecast Areas associated with each site.

AUCKLAND MARITIME RADIO

VHF CH: 16, 71
Broadcast Times 0703, 1403, 1903 NZ time

TARANAKI MARITIME RADIO

VHF CH: 16, 67
Broadcast Times 0733, 1433, 1933 NZ time

D'URVILLE MARITIME RADIO

VHF CH: 16, 67
Broadcast Times 0733, 1433, 1933 NZ Time

FAREWELL MARITIME RADIO

VHF CH: 16, 68
Broadcast Times 0733, 1433, 1933 NZ Time
0750, 1450, 1950 NZ Time

PAPAROA MARITIME RADIO

VHF CH: 16, 71
Broadcast Times 0750, 1450, 1950 NZ time

PAPAROA MARITIME RADIO

VHF CH: 16, 68
Broadcast Times 0750, 1450, 1950 NZ time

NORTHLAND MARITIME RADIO

VHF CH: 16, 71
Broadcast Times 0703, 1403, 1903 NZ time

NORTHLAND MARITIME RADIO

VHF CH: 16, 67
Broadcast Times 0703, 1403, 1903 NZ time

PLENTY MARITIME RADIO

VHF CH: 16, 68
Broadcast Times 0703, 1403, 1903 NZ time

NAPIER MARITIME RADIO

VHF CH: 16, 68
Broadcast Times 0710, 1410, 1910 NZ time

WELLINGTON MARITIME RADIO

VHF CH: 16, 71
Broadcast Times 0733, 1433, 1933 NZ time

PICTON MARITIME RADIO

VHF CH: 16, 68
Broadcast Times 0733, 1433, 1933 NZ time

AKAROA MARITIME RADIO

VHF CH: 16, 68
Broadcast Times 0720, 1420, 1920 NZ time

WAITAKI MARITIME RADIO

VHF CH: 16, 67
Broadcast Times 0720, 1420, 1920 NZ time

CHALMERS MARITIME RADIO

VHF CH: 16, 71
Broadcast Times 0720, 1420, 1920 NZ time

BLUFF MARITIME RADIO

VHF CH: 16, 68
Broadcast Times 0740, 1440, 1940 NZ time

B.C.L.
BROADCAST COMMUNICATIONS LIMITED

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As radio amateurs look for their friends worldwide on their frequencies and the mode of transmission and also study the propagation that is prevalent at the moment, the shortwave listener looks at the world from another angle, looks for international news, local news, interesting programmes, the cultures of other countries and the highlights are the special sessions for short-wave listeners.

Shortwave listening has had major progress in the last 75 years and today with keypad receivers and transmitters with strengths up to 500,000 W and a good aerial system, almost perfect reception is available from many international broadcasters and a collation of the frequency users reduces interference on the international bands and short-wave listening has never been so varied and interesting as it is today. Since the end of the Cold War jamming has almost ceased and therefore frequencies are relatively clear of interference; and with a suitable agreement that frequency changes will take place only twice a year, your favourite shortwave station can be relied on to be heard on the same spot on the dial. These frequency changes take place at the end of March and October and this has brought a lot of stability into short-wave broadcasting because in the past there were often four changes of frequency a year and the listener lost touch with their favourite station.

Even today, international broadcasters still appreciate reports from shortwave listeners and issue verifications of the reception of their signals. The number may have decreased somewhat due to budget cuts, while many international broadcasters have paid monitors scattered throughout the world who report each week on the signals to their respective broadcaster and, of course, are interested in the reception of the transmissions in a given area. These monitors mean that the broadcaster is certain of a continuous flow of information based on reception each week and as far as the writer is concerned, he has been monitoring the BBC for 54 years and therefore has an excellent understanding of reception conditions and the propagation of signals week by week. The reports to London cover the transmissions beamed to the South Pacific during a period of 12 hours each day and during the war years and up to 1975 these airmail reports were backed up by international telegrams and over 1,300 were sent to London reporting specific items of interest of reception to BBC engineers.

In the case of Radio Canada and the Voice of America, weekly reports

Easy Listening

This list is for the new listener to international shortwave radio. All broadcasts are in the English language and beamed to the Pacific area. The schedules are valid until October 30, 1996, but stations may change frequencies to avoid interference or provide improved reception.

Times are **New Zealand Standard Time**, 12 hours ahead of UTC (GMT).

Frequencies are quoted in **kiloHertz**. If you have a radio with keypad for frequency input, just punch up these frequencies and these stations should be audible. Please let me know if this guide is of assistance to you. It is a selection only of the many stations which may be heard on shortwave. Note that during the New Zealand winter shortwave signals are generally better during daylight hours, and in darkness during the summer months.

Australia	Radio Australia, Melbourne 6.00am-8.00am 10.00am-7.00pm 2.30pm-7.30pm	6080, 9860 15365, 17795 15365
Belgium	Radio Flanders International, Brussels 6.30pm-7.00pm	9925, 9940
Canada	Radio Canada International, Montreal 8.00am-9.30am 5.00pm-5.29pm (Monday-Friday)	11690, 13650 6050, 7295
China	China Radio International, Beijing 9.00pm-11.00pm	11755, 15440
Ecuador	HCJB World Radio, Quito 7.00pm-11.30pm	9645
Germany	Deutsche Welle, Cologne 9.00p-9.50pm	6160, 12055
Great Britain	BBC World Service, London 8.00am-Noon 6.00pm-8.15pm 9.00pm-11.30pm	11955 7145, 11955 11765
Holland	Radio Nederland, Hilversum 7.30-9.30pm 9.30-10.30pm	9720, 9820 12065, 13710
India	All India Radio, Delhi 10.00-11.00pm	15050, 13700
Israel	IBA, Jerusalem 4.00pm-4.15pm	7465, 9435
Japan	Radio Japan, Tokyo 5.00pm-8.00pm 7.00pm-8.00pm	11920 11850
New Zealand	Radio New Zealand International, Wellington 7.52am-11.07am 11.07am-4.58pm 8.16pm-12.05am	11735 15115 6100, 9700
Norway	Radio Norway, Oslo (English on Sunday) 6.00pm-6.30pm	7295
Saipan	KHBI Monitor Radio 9.00pm-10.00pm	13840
Switzerland	Swiss Radio International, Berne 9.00pm-9.30pm	9885, 13685
USA	Voice of America, Washington 10.00am-Noon 11.00pm-Midnight	9705, 17735 5985, 9645

For the latest shortwave news

Radio Netherlands: Media Network, for Arthur Cushen's Pacific DX Report on the first or second Thursday of the month at 7.50pm on 9720, 9020 kHz or 9.50pm on 12065 or 13710 kHz.

Radio New Zealand International: Mailbox, with Arthur Cushen's report every second Monday at 4.30pm on 15115 kHz; Thursday 8.30pm on 6100 or 9700 kHz; Saturday 7.30pm on 9795 kHz

From: Arthur T. Cushen, 212 Earn Street, Invercargill.



DXing over long distances is done on these two communications receivers: McKay Dymec (upper) and a Racal (lower) while monitoring for BBC, Voice of America, Radio Canada and the like, Sony ICF 2001 and the 2010 receivers are used.

are submitted to Montreal and Washington, and in the case of Radio Canada we undertake a band survey each month. A band is allocated and it could be between 2100–2300 UTC for instance in the 25 m band 11600–12000 kHz, and we could identify over 100 stations during that period of listening, note the length of transmission, the signal strength, and identify the broadcaster. This is a practical exercise so that Radio Canada engineers can see at a glance what channels are vacant as far as reception is concerned in the South Pacific and what stations are causing interference to themselves or other broadcasters.

In the case of the Voice of America, the reports are filled in on special forms, numbers are circled indicating date, time, frequency and other such information and this is optically read in Washington and converted onto the computer. This involves considerable work in which preparing the weekly sheets which cover 48 checks each day.

To keep listeners informed of the rapid changes of signals from various parts of the world as the seasons make their appearance and bring in weaker local and domestic broadcasts, DX sessions are carried out by most international broadcasters to cater for news of their own transmissions and that of other broadcasters heard in their area. I have been broadcasting on Radio New Zealand International as it is now known, since 1960 in Mailbox which is carried in three transmissions every two weeks and since 1966 on Radio Nederland's Media Network broadcasting on a Thursday in 12 transmissions to suit evening reception across the world. The broadcasts from Radio Nederland are also carried on many relay stations including Bonaire in the Caribbean; Mada-

gascar off the coast of Africa; several transmission sites in the former Soviet Union including Petro and Irkutsk in East Asia and they provide excellent reception for the transmission here in New Zealand. As well, the broadcasts are carried on two satellites, Astra and Galaxy for reception in Europe and North America. It is also carried on a cable system in Europe and available on the Internet. My Pacific DX was recorded for the past 30 years at RNZ station 4ZA when I took in my braille script and recorded inserts and then the tape was air-mailed to Holland with a time lag of up to two weeks. But these days Jonathan Marks, the producer of the programme, telephones me from Hilversum on a Tuesday morning and the material is broadcast on the Thursday evening.

As well as my interest in listening, I have also been writing for many publications including *Electronics Australia* for the past 44 years, giving readers in the South Pacific news of activity on the shortwave bands. Of course, the basis of all this activity is radio listening and over the past 58 years I have confirmed over 3,000 AM medium wave stations from all continents, and 6,500 short-wave stations from a total of 300 countries.

Here, the New Zealand Radio DX League and its monthly publication *New Zealand DX Times* gives the membership in this country information of what is being heard by listeners in New Zealand and by our many contacts overseas. Information on the League, a list of easy short-wave stations to tune to, details on receivers and aerials; all this available from the writer of this feature, Arthur Cushen, 212 Earn Street, Invercargill, who would be happy to answer any questions that your Call Book readers may have on the radio listening side of the activity.



Arthur Cushen preparing a script in braille for broadcast on Media Network from Radio Nederland. Note the office files are both in print and braille so both staff and Arthur can find the necessary files.

SINPO CODE

S signal strength

1. Barely Audible
2. Poor
3. Fair
4. Good
5. Excellent

I interference

1. Extreme
2. Severe
3. Moderate
4. Slight
5. Nil

N noise

1. Extreme
2. Severe
3. Moderate
4. Slight
5. Nil

P fading

1. Extreme
2. Severe
3. Moderate
4. Slight
5. Nil

O overall rating

1. Unusable
2. Poor
3. Fair
4. Good
5. Excellent

for reporting broadcast transmissions

New Zealand Radio Spectrum Usage

This listing indicates significant, but not necessarily exclusive, use of ranges of frequencies (ie "bands") by particular radio services within New Zealand. It also includes broad Region III allocations from the International Radio Regulations (IRR) where international co-ordination of spectrum is particularly important such as in the aeronautical, maritime, satellite, navigation, space research, astronomy and amateur services.

Some spectrum is the subject of privately owned management rights and this listing is indicative usage based on such current information as the Ministry has as to the nature of licences issues by managers of that spectrum.

The contents of this document are subject to change at any time.

Ministry of Commerce Communications Division

9-90	Fixed, Maritime-Mobile and Radionavigation
90-120	Radionavigation (LORAN C)
120-140	Restricted Radiation Devices (RRD)
140-165	Fixed, Maritime-Mobile and Radionavigation
165-190	Fixed, Radionavigation and Amateur
190-285	Aeronautical Beacons
285-325	Aeronautical and Maritime Beacons
325-415	Aeronautical Beacons
415-521	Maritime
521-1612	MF-AM Radio Broadcasting
1612-1690	Aeronautical Beacons, Broadcasting
1690-1800	Cordless Telephone (CT1/A-CT1/E Base Tx), Radio Buoy
1800-1950	Amateur 160 m Band
1950-2000	Radio Buoy
2000-2300	Fixed and Mobile
2300-2495	Broadcast 120 m Band (Tropical)
2495-2850	Fixed and Mobile, Standard Frequency 2.5 MHz
2850-3155	Aeronautical
3155-3200	Fixed and Mobile
3200-3400	Broadcast 90 m Band (Tropical)
3400-3500	Aeronautical
3500-3900	Amateur 80 m Band
3900-4000	Broadcast 75 m Band
4000-4438	Maritime
4438-4650	Fixed and Mobile
4650-4750	Aeronautical
4750-5060	Broadcast 60 m Band (Tropical), Standard Frequency 5 MHz
5060-5480	Fixed and Mobile
5480-5730	Aeronautical
5730-5900	Fixed and Mobile
5900-6200	Broadcast 49 m Band
6200-6525	Maritime
6525-7565	Aeronautical
6765-6795	Industrial, Scientific and Medical (ISM) and RRD
6795-7000	Fixed and Mobile
7000-7100	Amateur 40 m Band
7100-7350	Broadcast 41 m Band, Amateur (7100-7300)
7350-8100	Fixed and Mobile
8100-8815	Maritime
8815-9040	Aeronautical
9040-9400	Fixed
9400-9900	Broadcast 31 m Band
9900-10000	Fixed and Standard Frequency 10 MHz
MHz	
10.00-10.100	Aeronautical
10.100-10.150	Amateur 30 m Band
10.150-11.175	Fixed
11.175-11.400	Aeronautical
11.400-11.600	Fixed
11.600-12.100	Broadcast 25 m Band
12.100-12.230	Fixed
12.230-13.200	Maritime
13.200-13.360	Aeronautical
13.360-13.550	Fixed and Mobile
13.550-13.570	ISM (13.560 MHz) and RRD
13.570-13.870	Broadcast 22 m Band
13.870-14.000	Fixed
14.000-14.350	Amateur 20 m Band
14.350-15.000	Fixed and Standard Frequency 15 MHz
15.000-15.100	Aeronautical
15.100-15.800	Broadcast 19 m Band
15.800-16.360	Fixed
16.360-17.410	Maritime
17.410-17.480	Fixed
17.480-17.900	Broadcast 16 m Band
17.900-18.030	Aeronautical
18.030-18.068	Fixed
18.068-18.168	Amateur 17 m Band
18.168-18.780	Fixed
18.780-18.900	Maritime
18.900-19.020	Broadcast 15 m Band
19.020-19.680	Fixed
19.680-19.800	Maritime
19.800-21.000	Fixed and Standard Frequency 20 MHz
21.000-21.450	Amateur 15 m Band
21.450-21.850	Broadcast 13 m Band
21.850-21.870	Fixed
21.870-22.000	Aeronautical

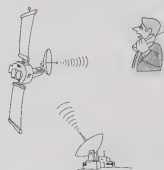
22.000-22.855	Maritime
22.855-23.200	Fixed
23.200-23.350	Aeronautical
23.350-24.890	Fixed and Mobile
24.890-24.990	Amateur 12 m Band
24.990-25.070	Fixed and Mobile, Standard Frequency 25 MHz
25.070-25.210	Maritime
25.210-25.550	Fixed and Mobile
25.550-25.670	Astronomy
25.670-26.10	Broadcast 11 m Band
26.100-26.175	Maritime
26.175-26.300	Fixed and Mobile
26.300-44.000	
26.800	Citizen Radio Service (40 channels)
26.950	Fixed and Mobile
27.300	ISM (27.120 MHz) and RRD)
28.000	Fixed and Mobile
29.700	Amateur 10 m Band
30.000	RRD (Restricted Radiation Devices)
30.800	Cordless Telephone (CT1 Base Tx)
31.300	Fixed and Mobile
31.600	RRD
34.200	Fixed and Mobile, TV Sound IF 33.40 MHz
34.600	Cordless Telephone (CT1 Base Tx)
35.400	Fixed and Mobile
37.200	ISM (37.500 MHz) and RRD
39.700	Fixed and Mobile, TV Vision IF 38.90 MHz
40.500	Cordless Telephone (CT1 Portable Tx)
40.800	ISM (40.680 MHz) and RRD
	Fixed and Mobile
44.000-68.000	
44-51	VHF TV Channel 1
51-53	Amateur
53-54	Fixed, Mobile and Amateur
54-61	VHF TV Channel 2
61-68	VHF TV Channel 3
68.000-74.800	
70.0000	Not Allocated
71.8000	Fixed "AA" Band (Alpha Tx)
72.0000	Not Allocated
73.0000	RRD
	Fixed "AA" Band (Beta Tx)
74.800-75.200	
	Aeronautical Marker Beacons
75.200-81.000	
76.20000	Land Mobile (Emergency Services—Base Tx)
78.10000	Not Allocated
79.10000	Land Mobile (Emergency Services—Mobile Tx)
	Not Allocated
88.000-108.000	
88.200	Guardband
88.800	VHF-FM Sound Broadcast (Low Power)
100.200	VHF-FM Sound Broadcast
100.800	RRD, Wireless Public Address Systems
100.990	Guardband
104.01875	Land Mobile "B" Band (Mobile Tx)
104.96875	Land Mobile Single Frequency
	Land Mobile "B" Band (Base Tx)
108.000-137.000	
112.0000	Aeronautical ILS Localiser
117.9750	Aeronautical VQR Beacons
132.0125	Aeronautical Communications (R)
132.5875	Aeronautical Repeater (OR) (Base Tx)
135.4125	Aeronautical Communications (OR)
136.0000	Aeronautical Repeater (OR) (Mobile Tx)
	Aeronautical Communications (R)
137.000-138.000	
	Mobile-Satellite and Meteorological Satellite (S-E)
180.000-144.000	
140.50000	Land Mobile (Emergency Services—Mobile Tx)
141.00000	Land Mobile Single Frequency
143.50000	Land Mobile (Emergency Services—Base Tx)
	Land Mobile Single Frequency
144.000-148.000	
	Amateur 2 m Band
148.000-149.900	
148.5000	Land Mobile (Civil Defence—Mobile Tx)
148.8125	Paging
149.0625	Land Mobile Single Frequency
149.3875	Paging
	Land Mobile (Base Tx)

(This spectrum was also allocated to the Mobile-Satellite Service (E-S) at the 1992 WARC with specific intended application worldwide for LEO satellite systems)

148.900		Radionav-Satellite (TRANSIT)	467.00000	Land Mobile "D" Band (Mobile Tx)
		Mobile-Satellite (E-S)	470.00000	RRD (Medical Telemetry only)
150.050-156.000	151.00000	Land Mobile Single Frequency	470.50000	Land Mobile Single Frequency
	153.41250	Land Mobile "E" Band (Base Tx)	471.00000	RRD
	153.59375	Land Mobile Single Frequency	471.50000	Land Mobile Single Frequency
		Land Mobile "E" Band (Mobile Tx)		
156.000-162.200		Maritime VHF (Mobile Tx)	472.000-494.000	Land Mobile "Lower F" Band (Mobile Tx)
	156.3625	Maritime Mobile Single Frequency		Not Allocated
	156.8875	Maritime VHF (Mobile Tx)		Land Mobile "Lower F" Band (Base Tx)
	157.5875	Wide Area Paging		Land Mobile Single Frequency
	158.0625	Land Mobile (Special Services—Mobile Tx)		Land Mobile "Upper F" Band (Base Tx)
	158.5875	Land Mobile Single Frequency		Land Mobile Single Frequency
	158.7875	Land Mobile Radio Repeater		Land Mobile "Upper F" Band (Mobile Tx)
	160.1000	RRD	494.000-518.000	Not Allocated
	160.6000	Maritime VHF (Base Tx)	518-550	UHF TV Channels E27 to E30
	160.9625	Land Mobile (Special Services—Base Tx)		UHF TV Channels E31 to E34
	161.4875	Maritime VHF (Base Tx)		UHF TV Channels E35 to E38
162.200-174.000		Land Mobile (Base Tx)/Fixed (Alpha Tx)		UHF TV Channels E39 to E42 (Channel 39 Amateur)
	165.7000	Land Mobile Single Frequency		UHF TV Channels E43 to E46
	166.8000	Land Mobile (Mobile Tx)/Fixed (Beta Tx)		UHF TV Channels E47 to E50
	170.3000	Land Mobile Single Frequency		UHF TV Channels E51 to E54
	171.0000	Land Mobile Radio Repeater		UHF TV Channels E55 to E58
	172.0000	Not Allocated		UHF TV Channels E59 to E62
174.000-230.000	174-181	VHF TV Channel 4	806.000-890.000	Land Mobile (Trunked Despatch—Mobile Tx)
	181-188	5		RRD
	188-195	6		Not Allocated (AMPS extension Channels 991-1023)
	195-202	7		AMPS Cellular (Mobile Tx)
	202-209	8		Not Allocated
	209-216	9		Land Mobile (Trunked Despatch—Base Tx)
	216-223	10		Cordless Telephone (CT2)
	223-230	11		Land Mobile Single Frequency
230.000-404.000	230.00-300.00	Fixed and Mobile		Not Allocated (AMPS extension Channels 991-1023)
	300.00-305.00	Fixed, Mobile and RRD		AMPS Cellular (Base Tx)
	305.00-312.00	Fixed and Mobile		GSM Cellular (Mobile Tx)
	312.00-315.00	Mobile-Satellite (E-S)		Fixed "K" Band
	315.00-328.60	Fixed and Mobile		ISM (925 MHz $\pm$ 4 MHz) and RRD,
	328.60-335.40	Aeronautical ILS Glidepath		Amateur (921-928 MHz)
	335.50-387.00	Fixed and Mobile		Fixed "K" Band
	387.00-390.00	Mobile-Satellite (S-E)		Paging
	390.00-399.00	Fixed and Mobile		Fixed "K" Band
	399.90-400.05	Radiolocation Satellite (TRANSIT)		GSM Cellular (Base Tx)
	400.05-400.15	Standard Frequency Satellite		
	400.15-401.00	Meteorological, Meteorological-Satellite (S-E)		
	401.00-404.00	Meteorological		
404.000-420.000	406.0000	Fixed "Lower I" Band	960-1247	960-1215 Aeronautical Radionavigation
	406.1000	Beacon—Satellite Distress Band		1215-1240 Radiolocation
	410.0000	Land Mobile (Trunked Despatch—Mobile Tx)		1240-1300 Radiolocation, Amateur
	414.0000	Fixed "Lower I" Band		1300-1400 Radiolocation/Navigation
	414.1000	Land Mobile Single Frequency		1400-1427 Astronomy and Space Research
	418.0000	Land Mobile (Trunked Despatch—Base Tx)	1427-1525	1427-1465 Fixed L1 (L) Band (Alpha Tx)
		Fixed "Lower I" Band		1465-1485 Broadcasting, Broadcasting-Satellite
				1485-1525 Fixed L1 (L) Band (Beta Tx)
420.000-430.000	425.0000	Fixed "Upper I" Band (Alpha Tx)	1525-1710	1525-1710 Mobile Satellite (S-E) (incl INMARSAT)
		Fixed "Upper I" Band (Beta Tx)		1559-1610 Radionavigation-Satellite (S-E) (eg GPS)
430.000-448.000		Radiolocation, Amateur 70 cm Band		1610-1626.5 Mobile-Satellite (E-S) (see 2483.5 MHz)
448.000-472.000	449.75000	Radiolocation, Fixed, Mobile and Amateur		1626.5-1660.5 Mobile-Satellite (E-S) (incl INMARSAT)
	450.00000	Land Mobile Single Frequency		1660.5-1670 Astronomy, Space Research, Met Aids
	450.27500	Fixed Single Frequency		1670-1675 Aeronautical Public Correspondence (APC)
	453.30000	Land Mobile "C" Band (Mobile Tx)		1675-1710 Meteorological-Satellite (S-E) (eg TIROS)
	453.62500	Land Mobile Single Frequency	1710-2300	
	454.97500	Fixed "J1" Band (Alpha Tx)	EXISTING PLAN	1710-1720 Not Allocated
	455.30000	Land mobile Single Frequency		1720-1805 Fixed U1 (M) Band (Alpha Tx)
	458.33750	Land Mobile "C" Band (Base Tx)		1805-1810 Not Allocated
	458.54000	Land Mobile Single Frequency		1810-1896 Fixed U1 (M) Band (Beta Tx)
	458.61000	RRD		1896-2300 Fixed L2 (N) Band
	458.66250	Land Mobile Single Frequency		1710-1785 Fixed (M Band) or Mobile (DCT 1800 ?)
	460.00000	Fixed "J1" Band (Beta Tx)		1785-1800 Not Allocated
	461.37500	Fixed "J2" Band (Beta Tx)		1800-1805 Aeronautical Public Correspondence (APC)
	461.47500	Fixed Single Frequency		1805-1880 Fixed (M Band) or Mobile (DCT 1800 ?)
	461.75000	Land Mobile Single Frequency		1880-1900 DECT
	461.80000	Land Mobile "D" Band (Base Tx)		1900-1920 FPLMTS/Possible DECT extension
	464.81250	Land Mobile Single Frequency		1920-1980 Fixed L2 (N) Band
	465.18750	Fixed Single Frequency		1980-2010 FPLMTS
	465.23750	Fixed "J2" Band (Alpha Tx)		2010-2170 Fixed L2 (N) Band
	466.57500	Fixed Single Frequency		2170-2200 FPLMTS
	466.67500	Land Mobile Single Frequency		2200-2300 Fixed L2 (N) Band
	466.80000	RRD	2300-2396	Fixed M2 (MDS) Band
	466.85000	Land Mobile Single Frequency	2396-2500	ISM (2400-2500) and RRD (2400-2483.5)
				Amateur 2396-2450
				Radiodetermination-Satellite (LOCSTAR)
				Mobile-Satellite (S-E) (2483.5-2500)
			2500-2690	2500-2675 Fixed U2 (O) Band
				2675-1690 Not Allocated
			2690-3400	2690-2700 Astronomy and Space Research
				2700-3300 Radiolocation/Navigation (Weather Radar)
				3300-3400 Radiolocation, Amateur

3400-4200	3400-3500 3500-3600 3600-4200	Fixed, Amateur Not Allocated Fixed U3 (P) Band Fixed Satellite (S-E) (INTELSAT)
4200-5875	4200-4400 4400-5000 5000-5650 5650-5875	Aeronautical Radionavigation Fixed, Mobile Radiolocation/Navigation (MLS 5000-5250) Radiolocation, ISM and RRD 6725-5875, Amateur 5650-5850
5875-8500	5875-5925 5925-6425 6425-7125 7125-7425 7425-7725 7725-8275 8275-8500	Fixed U5 Band Fixed L6 (R) Band Fixed U6 (T) Band Fixed L7 (V) Band Fixed U7 (U) Band Fixed L8 (W) Band Fixed U8 (Y) Band
GHz		
8.50-10.50	8.50-10.00 10.00-10.50	Radiolocation/Navigation Radiolocation, Amateur
10.50-10.68		Fixed U10 (H) Band
10.68-10.70		Astronomy and Space Research
10.70-13.25	10.70-11.70 11.70(F)-12.20 12.20-12.50 12.50-12.75 12.75-13.25	Fixed L11 (Z) Band Broadcast Satellite, MDS Fixed L12 (Q) Band, AUSSAT (S-E) Fixed U12 (S) Band, AUSSAT (S-E) Fixed L3 (X) Band
13.25-14.00	13.25-13.40 13.40-14.00	Aeronautical Radionavigation Radiolocation

14.00-15.35	14.00-14.50 14.50-15.35	Fixed-Satellite, AUSSAT (E-S) Fixed U14 (G) Band
15.35-17.30	14.35-15.40 15.40-15.70 15.70-17.30	Astronomy and Space Research Aeronautical and Radionavigation Radiolocation
17.30-23.60	17.30-17.70 17.70-19.70 19.70-21.20 21.20-23.60	Fixed-Satellite (E-S) Fixed 18 Band Fixed-Satellite, Mobile-Satellite (S-E)— Fixed 23 Band, BC-Satellite 21.4-22.0
23.60-25.25	23.60-24.00 24.00-24.05 24.05-24.25 24.25-25.25	Astronomy and Space Research Amateur Radiolocation, Amateur, ISM (24.125 GHz) and RRD Radionavigation
25.25-31.30		Not Allocated
31.30-37.00		Astronomy, Space Research, Radionavigation
37.00-47.00	37.00-40.00 40.00-47.00	Fixed 38 Band Fixed, Mobile and Satellite
47.00-47.20		Amateur
47.20-51.40	47.20-50.40 50.40-51.15 51.15-51.40	Not Allocated Fixed 50 Band Not Allocated
51.40-54.25		Space Research
54.25-58.28	54.25-57.20 57.20-58.20	Not Allocated Fixed 60 Band



NEW ZEALAND TELEVISION BROADCASTING CHANNELS

Channels 1 to 3 are VHF Low Band (Band I—44 to 68 MHz).

Channels 4 to 11 are VHF High Band (Band III—174 to 230 MHz).

Channels 27 to 62 are UHF Band (Band IV and V—518 to 806 MHz).

Transmissions conform to 625 line CCIR System B on VHF and System G on UHF with PAL colour.

The vision carrier frequency is nominally 1.25 MHz above the lower channel edge (an offset between -26 kHz and +26 kHz from the nominal may apply); the rest frequency of the analogue FM sound carrier is 5.4996 MHz above the vision carrier frequency; the centre frequency of the NICAM digital sound carrier (if transmitted) is 5.850 MHz above the vision carrier frequency. The B/G variant of 728 NICAM is used which has a total occupied bandwidth of 510 kHz.

Channel Number	Frequency Limits (MHz)	Vision Carrier (MHz)	FM Sound Carrier (MHz)	NICAM Sound Carrier (MHz)
VHF				
1	55 to 51	45.25	50.75	51.10
2	54 to 61	55.25	60.75	61.10
3	61 to 68	62.25	67.75	68.10
4	174 to 181	175.25	180.75	181.10
5	181 to 188	182.25	187.75	188.10
6	188 to 195	189.25	194.75	195.10
7	195 to 202	196.25	201.75	202.10
8	202 to 209	203.25	208.75	209.10
9	209 to 216	210.25	215.75	216.10
10	216 to 223	217.25	222.75	223.10
11	223 to 230	224.25	229.75	230.10
UHF				
27	518 to 526	519.25	524.75	525.10
28	526 to 534	427.25	532.75	533.10
29	534 to 542	535.25	540.75	541.10
30	542 to 550	543.25	548.75	549.10
31	550 to 558	551.25	556.75	557.10
32	558 to 566	559.25	564.75	565.10
33	566 to 574	567.25	572.75	573.10
34	574 to 582	575.25	580.75	581.10
35	582 to 590	583.25	588.75	589.10
36	590 to 598	591.25	596.75	597.10

37	598 to 606	599.25	604.75	605.10
38	606 to 614	607.25	612.75	713.10
38	614 to 622	615.25	620.75	621.10
40	622 to 630	623.25	628.75	629.10
41	630 to 638	631.25	636.75	637.10
42	638 to 646	639.25	644.75	645.10
43	646 to 654	647.25	652.75	653.10
44	654 to 662	655.25	660.75	661.10
45	662 to 670	663.25	668.75	669.10
46	670 to 678	671.25	676.75	677.10
47	678 to 686	679.25	674.75	685.10
48	686 to 694	687.25	692.75	693.10
49	694 to 702	695.25	700.75	701.10
50	702 to 710	703.25	708.75	709.10
51	710 to 718	711.25	716.75	717.10
52	718 to 726	719.25	725.75	725.10
53	726 to 734	727.25	732.75	733.10
54	734 to 742	735.25	740.75	741.10
55	742 to 750	743.25	748.75	749.10
56	750 to 758	751.25	756.75	757.10
57	758 to 766	759.25	764.75	765.10
58	766 to 774	767.25	772.75	773.10
59	774 to 782	775.25	780.75	781.10
60	782 to 790	783.25	788.75	789.10
61	790 to 798	781.25	796.75	797.10
62	798 to 806	799.25	804.75	805.10

The 20-year management rights for Channels 27 to 34 and 43 to 62 have been sold to a number of television broadcast companies.

Channels 35 to 38 are currently used for Aeronautical Radionavigation (Radar).

Channel 39 is used for Amateur Television and Amateur Narrow Band Modes, see GMTAG Bandplan.

Channel 40 to 42 are used for low power television.

Someone else's problem
with time
could become YOURS
Support your local Club
and National Association

MOUNTAIN RADIO SERVICES IN NEW ZEALAND

In New Zealand the opportunity exists for many to take the hills. To help those who do so there are several Mountain Radio Services who hire lightweight mountain radios for people to communicate back to a town base or to other parties in the field. These mountain radio services are non-profit organizations who just charge sufficient for their services to cover their operating expenses.

The radios are single sideband and operate just below the 80-m band on 3261 kHz in the South Island and 3345 kHz in the North Island. Many radios are also equipped to operate on the DoC National Park channels. The radios are used with a longwire half-wave

dipole and with careful setting up are capable of communicating with the base stations from anywhere in the country.

The radios may be obtained from the following organizations:
Canterbury Mountain Radio Service—call-sign ZKIB, 7 Walker Street, PO Box 22-342, CHRISTCHURCH. Telephone (03) 332-5846, Fax (03) 366-5241.

Central North Island Mountain Radio Service—call-sign ZKBY, 44 Rotokawa Street, TAUPŌ. Telephone, Fax (07) 378-9676, (07) 386-6163.

Hawkes Bay Mountain Radio Service—call-sign ZLKU, 12 Upham Crescent, TARADALE. Telephone (06) 844-2797.

Marlborough Mountain Radio Services Inc.—call-sign ZKMM, 64 Park Terrace, BLENHEIM. Telephone (03) 578-5311.

Northland Mountain Radio Service—call-sign ZKVS, PO Box 1410, WHANGAREI. Telephone (09) 437-5347.

Southland Field Radio—call-sign ZLFK, Mill Road South, RD 1, SOUTHLAND. Telephone (03) 216-3751. Fax (03) 218-3305.

Wellington Mountain Radio Service—call-sign ZLJG, PO Box 30-519, WELLINGTON. Telephone/Fax (04) 564-6929.

Contact with the base stations is made at fixed schedule times in the evening. For example, Canterbury

7.30pm, Southland 8.00pm. But many have a continuous watch during the day and emergency calls may be sent at any time. At scheduled times weather forecasts and messages are relayed to the field radio. It is not unusual to have 30 or more stations on the nets.

The principal hire radios are type MRS1 which were developed and built by mountain radio personnel. These are supplemented by Codan 8332 and AWA TR-105 types.

The Mountain Radio Services have been in operation now for over 25 years and it is recommended that those persons venturing into the mountains carry a mountain radio.

CHRISTCHURCH VHF DX GROUP

- Services provided: 6 metre beacon
 Frequency: 50.0400 MHz
 InfoMap Series 260: M36 603353
 Branch/Group: Christchurch VHF DX Group
 Location: Rolleston
 Trustees: Ross Johnson ZL3ADT, Mike Foubister ZL3TIC
- Service Provided: Phone patch
 Frequencies: 144.180 MHz input—88.5 Hz subtone—press * to connect
 438.800 MHz output—full duplex
 InfoMap Series 260: M36 778362
 Branch/Group: Christchurch VHF DX Group
 Location: Christchurch
 Trustee: Wayne Garraway ZL3TCV

Basic SI Units

Quantity	Name of unit	Unit symbol
Electric current	ampere	A
Length	metre	m
Luminous intensity	candela	cd
Mass	kilogramme	kg
Thermodynamic temperature	degree Kelvin	°K
Time	second	s

Derived SI Units

Physical quantity	SI unit	Unit symbol
Electric capacitance	farad	F = A s/V
Electrical charge	coulomb	C = A s
Electrical potential	volt	V = W/A
Electric resistance	Ohms	Ω = V/A
Force	Newton	N = kg m/s ²
Frequency	Hertz*	HZ = s ⁻¹
Illumination	lux	lx = lm/m ²
Inductance	Henry	H = V s/A
Luminous flux	lumen	lm = cd sr
Magnetic flux	Weber	Wb = V s
Magnetic flux density	Tesla†	T = Wb/m ²
Power	Watt	W = J/s
Work energy, quantity of heat	joule	J = N m

*Hertz is equivalent to cycle per second.

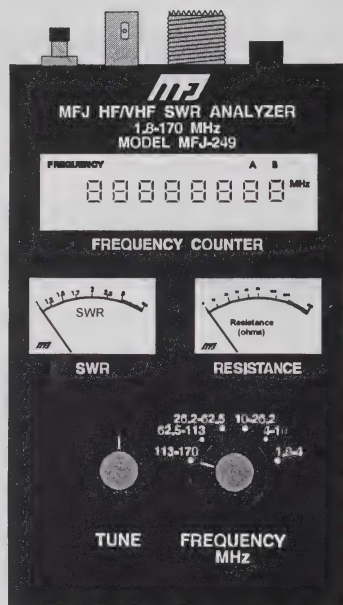
†Tesla is equivalent to Weber per square metre.

Conversion factors

To convert	into	Multiply by	Conversely
Amp hours	Coulombs	3600	2.778×10^{-4}
Atmospheres	Lb/sq.in	14.70	0.068
Centigrade	Kelvin	$^{\circ}\text{C} + 273 = ^{\circ}\text{K}$	$^{\circ}\text{K} - 273 = ^{\circ}\text{C}$
Cubic inches	Cubic feet	5.787×10^{-4}	1728
Cubic inches	Cubic metres	1.639×10^{-5}	6.102×10^4
Degrees	Radians	1.754×10^{-2}	57.3
Dynes	Pounds	2.248×10^{-6}	4.448×10^5
Ergs	Foot pounds	7.376×10^{-8}	1.356×10^7
Feet	Centimetres	30.48	3.281×10^{-2}
Foot pounds	Kilowatt hours	3.766×10^{-7}	2.655×10^6
Gausses	Lines per sq.in.	6.452	0.155
Grams	Dynes	980.7	1.02×10^{-3}
Grams per cm	Pounds per in	5.6×10^{-3}	178.6
Horsepower	Kilowatts	0.746	1.341
Inches	Centimetres	2.54	0.3937
Kilograms	Pounds (lb)	2.205	0.454
Kilometres	Feet	3281	3.048×10^{-4}
Kilometres	Nautical miles	0.540	1.853
Kilometres	Statute miles	0.621	1.609
Kilowatt hours	Joules	3.6×10^6	2.778×10^{-7}
Kilowatt hours	HP hours	1.341	0.7457
Knots	Miles per hour	1.1508	0.869
Lamberts	Candles per sq.cm	0.3183	3.142
Lamberts	Candles per sq.in	2.054	0.4869
Lumens per sq.ft	Foot candles	1	1
Lux	Foot candles	0.092892	10.764
Metres	Feet	3.28	10.764
Metres	Yards	1.094	0.9144
Miles per hour	Feet per second	1.467	0.68182
Nepers	Decibels	8.686	0.1151
Tons	Pounds	2240	4.464×10^{-4}
Watts	Ergs per second	10^7	10^{-7}

MFJ PRODUCTS

A good range of MFJ products are available in New Zealand.



To receive a FREE MFJ Catalogue and price list, please send a 80 cent stamp to:

City Electrical
PO Box 4376
Palmerston North

Phone 025/439581
After Hrs 06/3564103
mfjnz@clear.net.nz

ELECTRONIC PROJECT CONSTRUCTION

Derek Fortune ZL1UFJ (B.Sc.) presents some useful pointers on this popular and rewarding pastime.

Construction of one's own electronics project was once a mighty undertaking. Several tubes and a bulky power supply were required to achieve almost any logic or amplifier function. Enter silicon ... no longer the case!

"Building block" integrated circuits make easy the realization of ideas like a precise, linear, voltage-to-frequency converter. These devices were limited to the realms of theoreticians less than 20 years ago. How about a preamp device having a flat 20 dB gain and low noise from DC to over 2 GHz. It operates from almost any power supply voltage (change one resistor) and costs less than \$10! The choice of project or device you might construct is almost limitless—test gear, home stereo and appliance control devices, projects for the car or boat, projects for the radio shack.

Choice of project

The classic beginners' text on electronics will describe several radio receivers, ranging upwards from the crystal set. Receiver projects are still very popular, and an amateur band transceiver project leads the licensed constructor into QRP (low power) operation. However, many people look towards something different. Magazines are forever spitting out new ideas for projects to build—whether you attempt a crystal set or a computer, there is a thrill in using the equipment you had a hand in making that is not available from the purchase of commercial, branded gear. You cannot help but teach yourself about electronics as you study someone else's circuit and explanations and then recreate it under your own conditions.

Not every project works from the first power-up; but the understanding of the project grows rapidly as the fault-finding technique progresses. If you cannot solve the problem yourself, you can usually find assistance from friends, clubs, or the project author as to finding the problem. Most authors are only too happy to discuss their project on the telephone, or in person. Letters like "it doesn't work, what can I do?" are much more difficult to answer. Interactive discussions allow the author to pose questions, and the two parties can converge on a likely solution.

Sources of designs

Magazines are definitely the best sources of varied, up-to-date projects. Until a few years ago *Electronics*

Today International (ETI) was arguably the best publication available in this part of the world for a wide range of constructional articles for every purpose and skill level. *Electronics Australia* had, and still has, a regular trail of constructional projects on offer. Several European magazines have also run for years producing similar piles of potential projects. *QST* (published by the ARRL) and a host of other national amateur radio associations' magazines offer projects more selected toward the amateur fraternity. In New Zealand *Break-In* offers some excellent articles, but suffers from a dearth of writers of constructional material. If you have a pet project of your own design working well, get writing! Be sure to include a PCB layout with your article. Do contact a component supplier like myself for details on currently available components before finalizing your design.

Many magazines of this nature are available through libraries. Some, like the Auckland University Engineering School Library, keep bound volume sets of each year's issues of many of these periodicals. Public libraries also keep desk copies available for reference use. Photocopiers are available in all these places for public use: bring a bag of 20 coins!

The annual index is usually included with the December issue of each magazine, so searching for articles on a given topic becomes quite easy. Radio Club libraries also can offer collections of books and magazines to the newcomer.

Choosing designs from Australasian magazines by preference is likely to give the least problems with obtaining components. Some European magazines especially are prone to use components which are very hard to get in New Zealand. More about this below.

Obtaining components in New Zealand

The Dick Smith chain still offers some discrete electronic components. However the range seems to be decreasing steadily. The writer

operates a business in Auckland offering a wide range of electronic components (refer to the advertisement opposite). We also provide a sourcing service from overseas for items not held ex-stock.

To this end I am always looking for surplus supplies of electronic components, especially semiconductors, to hold on database here. If you have, or know of, manufacturers' surplus stock collections, I am very interested in lists of the component types and quantities available. I believe that networking the details of these collections together can solve many of our component sourcing problems within New Zealand.

Contact other local amateurs if you are looking for a component supplier in your region.

Printed Circuit Boards

PCBs for projects in many magazines are available. Mini-Tech in Auckland offers the PCBs for literally hundreds of *Electronics Today International* projects, as well as *Electronics Australia* and others. You can save a lot of time and trouble, especially if you are new to electronics, by obtaining the PCB to go with the published diagrams.

Construction techniques

Beginning constructors are well advised to obtain a copy of the *ARRL Handbook*. This monstrous text is probably the single best book anywhere to introduce the enthusiast to every part of amateur radio and contains a chapter on construction techniques. Tools and hardware, soldering and metalwork are described in detail in this chapter. Good soldering technique and care of the soldering iron is very important as you progress beyond your first projects. Most tables you will ever need in amateur radio, from drill sizes to low-pass filter component values are contained in this mighty tome.

AC wiring technique needs to be given special attention in countries like ours which employ nearly the highest mains voltage in the world. One hundred and seventeen volts

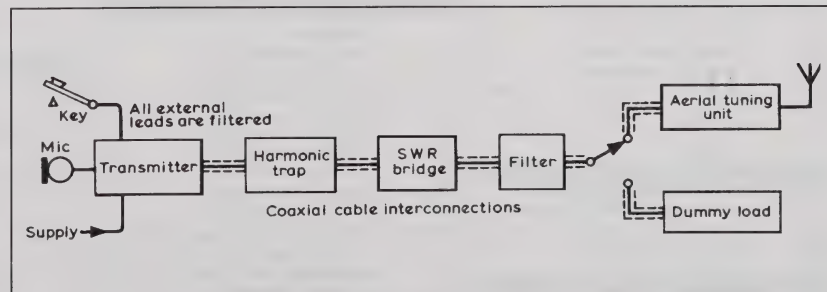
AC usually gives you a shock you can feel—but 230 V on the other hand, and a good earth on the other, is quite likely to give you something to remember, if you live to remember it at all! Do not use the nearest convenient piece of wire when connecting the mains input wiring for your project. Hookup wire with the normal thin insulation is NOT SAFE for use at 230 V. Avoid odd colours too—the use of conventional colours for mains wiring is strongly recommended. Brown should be used for Phase and blue for Neutral: then you can keep red and black for low voltage rails.

Ordinary three-core power flex is easy to split with a sharp hobby knife drawn along the cable from one end. Pull out the three wires and tear the jacket away from them. In this way you can tear along a length of cable for as much wire as required. This technique yields three correctly coloured, well-insulated, AC-rated wires, perfectly suited to the internal AC wiring required for the project.

Plastic sleeving, or even better, heat-shrink tubing, is easy to fit to the few connections that really matter in most projects. Heat-shrink tubing is available in short lengths in several colours and can be shrunk by several methods apart from the usual gun. Take the time over little things like these, and then you need not fear investigating the equipment whilst it is operating.

Keeping clear when the power is first turned on is not the point. If you make a wiring mistake, you will find it hard to spot if you have used red wire for all connections. You may discover it later; if you put the oscilloscope ground on the red wire going to earth for some reason, you may find it is actually the red wire going to Phase when the clip explodes between your fingers! (The scenario here is imaginary, but someone did do something very similar with my work 'scope once!)

This article is a brief collection of ideas only, and will be expanded in future *Call Books* if interest is expressed. Please contact me with additional suggestions and comments! Happy constructing.



Suggested layout of equipment for minimum spurious radiation.

COMMONLY USED SYMBOLS AND ABBREVIATIONS

A	
A	ampere, amplification factor
AC	alternating current
A/D	analogue-to-digital
AF	audio frequency
afc	automatic frequency control
afsk	audio frequency shift keying
agc	automatic gain control
Ah	ampere hour
alc	automatic load (or level) control
AM	amplitude modulation
a.m.	morning
AMSAT	Radio Amateur Satellite Corporation
AMTOR	Amateur Teleprinting Over Radio
anl	automatic noise limiter
ant	antenna
AOS	acquisition of signal
ARA	Amateur Radio Association
ARC	Amateur Radio Club
AREC	Amateur Radio Emergency Corps
ARS	Amateur Radio Society; Amateur Radio Station
ASCII	American National Standard Code for Information Interchange
ATV	amateur television
avc	automatic volume control
AWG	American wire gauge
az-el	azimuth-elevation

B	
B	flux density; susceptance
BASIC	Beginner's All-purpose Symbolic Instruction Code (computer language)
b	byte (a group of bits or binary digits, usually eight)
bc	broadcast
BCD	binary-coded-decimal
BCI	broadcast interference
bcl	broadcast listener
bd	baud (bits/sec)
ber	bit error rate
bit	binary digit
BFO	beat-frequency oscillator
bpf	band pass filter
bw	bandwidth
byte	computer word, 8 bits

C	
C	Celsius, capacity, Coulomb
c	velocity of EM waves
CATV	cable television
CB	citizens band
CCIR	International Radio Consultative Committee
CCIT	Consultative Committee for International Telegraph and Telephone (ITU)
CCS	constant current source
cctv	closed circuit television
ccw	coherent CW; counter-clockwise
CD	Civil Defence
Ch	channel
cm	centimetre
CMOS	(or COSMOS)—complimentary-symmetry metaloxide semiconductor
coax	coaxial cable or connector
COR	carrier-operated relay
CPU	central processing unit
CQ	general call to all stations
CRT	cathode-ray tube

ct	centre tap
CTCSS	continuous tone coded squelch system
CW	continuous wave (code); clockwise

D	
D	electrostatic displacement; flux density
D/A	digital-to-analogue
dB	decibel
dBd	antenna gain referenced to a dipole
DBDM	double-balance diode mixer
dBi	antenna gain referenced to an isotropic, a dipole has a gain of 2.14 dBi
dBm	decibel referred to 1 milliwatt
dBW	decibel referred to 1 watt
DC	direct current
det	detector
DF	direction finder; direction finding
DIP	dual-in-line package, 14 to 16 pins
dpdt	double-pole double-throw
dpst	double-pole single-throw
dsb	double sideband
DTL	diode-transistor logic
DTMF	dual tone multi-frequency
DVM	digital voltmeter
DX	long distance
DXCC	DX Century Club

E	
E	voltage
e	base of Napierian logs
ECL	emitter-coupled logic
ECO	electron-coupled oscillator
EHF	extra high frequency (30–300 GHz)
EHT	extra high tension
eirp	effective isotropic radiated power
EMC	electro-magnetic capability
E-M-E	earth-moon-earth (moonbounce)
emf	electromotive force (voltage)
EMI	electro-magnetic interference
EMP	electromagnetic pulse
EPROM	erasable programmable read-only memory
EUV	extreme ultra-violet radiation
EQX	equator crossing
erp	effective radiated power

F	
f	frequency
F	farad; Fahrenheit
FAX	facsimile
FCC	Federal Communications Commission
FD	Field Day
FET	field-effect transistor
FF	flip-flop
FM	frequency modulation
FMT	frequency measuring test
FMTAG	Frequency Management Technical and Advisory Group
fof	optimum working frequency
fsd	full scale deflection
FSK	frequency-shift keying

G	
g	gram
G	giga (109); conductance; magneto motive force
GaAs FET	gallium arsenide field-effect transistor
GDO	grid-dip or gate-dip oscillator
GHz	gigahertz
gnd	ground

H	
H	henry; magnetic field strength
HAAT	height above mean terrain
HF	high frequency (3–30 MHz)
HFO	heterodyne-frequency oscillator
hpf	highest possible frequency; high pass filter
HT	high tension
Hz	hertz

I	
I	current
IARU	International Amateur Radio Union
IC	integrated circuit
i-d	identification; identifier
ID	inside diameter
IF	intermediate frequency
IMD	inter-modulation distortion
I/O	input/output
IRC	international reply coupon
ISB	independent sideband
ITU	International Telecommunication Union
IW	Intruder Watch (Monitoring Service)

J	
J	Joule
j	indicator for reactive component of an impedance; (+j inductive; -j capacitive); joule
JFET	junction field-effect transistor

K	
k	kilo (1000)
K	kilobyte; specific inductive capacity; Kelvin; dielectric constant
kg	kilogram
kHz	kilohertz (103)
km	kilometre
kV	kilovolt
kW	kilowatt
kWh	kilowatt hour

L	
L	self inductance
LC	inductance-capacitance
LCD	liquid crystal display
LED	light-emitting diode
LF	low frequency (30–300 kHz)
lhcp	left-hand circular polarisation
LMO	linear master oscillator
LO	local oscillator
loran	long-range navigation
LOS	loss of signal
lp	long periodic; long path
LSB	lower sideband; least significant bit
LSI	large-scale integration
LT	low tension
luf	lowest usable frequency
lw	longwave; long wire

M

m	metre (distance or band); milli (10 ⁻³); mass
M	mega (10 ⁶); mutual inductance
mA	milliampere (one-thousandth of an Amp)
mAH	milliamper hour
MARS	Military Affiliate Radio System
MATV	multi-access television
MF	medium frequency (300–3000 kHz)
mH	millihenry
MHz	megahertz (106)
mike; mic	microphone
mini-DIP	dual-in-line package of 8 pins
mi/h	miles per hour
mi/s	miles per second
mix	mixer
mm	millimetre
MO	master oscillator
MOS	metal oxide semiconductor
mod	modulator
modem	modulator/demodulator
MOX	manually operated switching
ms	millisecond
m.s.	meteor scatter
m/s	metres per second
MSB	most significant bit
MSI	medium-scale integration
MSTV	medium-scan television
MUF	maximum usable frequency
MUX	multiplex; multiplexer
mV	millivolt
mW	milliwatt

N

N	modulation factor
n	nano (10 ⁻⁹)
nbfm	narrow-band frequency modulation
nbvm	narrow-band voice modulation
n.c.	no connection
NC	normally closed
NF	noise figure
NiCad	nickel cadmium
NL	noise limiter
NMOS	n-channel MOS
NO	normally open
npn	negative-positive-negative
nS	nanosecond
NZART	New Zealand Association of Radio Transmitters

O

OD	outside diameter
OM	old man
op amp	operational amplifier
osc	oscillator
OSCAR	Orbiting Satellite Carrying Amateur Radio
OTC	Old Timers' Club
oz	ounce

P

p	pico (10 ⁻¹²)
P	power
PA	power amplifier; public address system
PAM	pulse amplitude modulation
PCB	printed (or etched) circuit board
PCM	pulse code modulation
PEP	peak envelope power
pF	picofarad
ph	phone
PIN	positive intrinsic negative
PIV	peak inverse voltage

pk
pk-pk
PLL
PM
p.m.
PMOS
pnp
ppi
pot
PROM
PRV
PSK
PTO
PTT
PSU

peak
peak to peak
phase-locked loop
phase modulation
afternoon/night
p-channel MOS
positive-negative-positive
plan position indicator (radar)
potentiometer
programmable read-only memory
peak reverse voltage
phase-shift keying
permeability-tuned oscillator
push-to-talk
power supply unit

Q

Q figure of merit (tuned circuits); charge; quantity
QRP low power (less than 10 watts input)
QTHR address correct in *Call Book*

R

R resistance
RAM random access memory
R/C radio control
R-C resistor-capacitor
rcvr receiver
rev/min revolutions per minute
RF radio frequency
RFC radio-frequency choke
RFI radio-frequency interference
rhcp right-hand circular polarisation
RI Radio Inspector
RIT receiver incremental tuning
RLC resistor, inductance, capacitor network
rms root-mean-square
RO Radio Officer
ROM read-only memory
rptr repeater
RS Radiosport Satellite (USSR)
RSGB Radio Society of Great Britain
RST readability-strength-tone
RT radiotelephone
RTL resistor-transistor logic
RTTY radioteletype
Rx receiver

S

S second; magnetic reluctance; Siemens
SAE self-addressed envelope
SASE stamped SAE
SCR silicon-controlled rectifier
SHF super-high frequency (3–30 GHz)
SINAD Ratio of Signal to Noise and Distortion
SM silver mica (capacitor)
SNR; S/N signal-to-noise ratio
spdt single-pole double-throw
spst single-pole single-throw
SS sweepstakes; spread spectrum
SSB single sideband
SSC AMSAT Phase III special service channels
SSI small-scale integration
SSTV slow-scan television
STSP short-term special purpose (FM repeaters)
SWL shortwave listener
SWR standing-wave ratio
sync synchronous; synchronising
SYNCART synchronous satellite carrying Amateur Radio Transponder

T

t time; temperature C
T period; temperature K
TA technical adviser
TCA time of closest approach
TE trans-equatorial (propagation)
tfc traffic
THz tetrahertz (1012)
THD total harmonic distortion
tpi turns per inch
T-R transmit-receive
TTL; T2L transistor-transistor logic
TTY teletypewriter (from Teletype, the trade mark of Teletype Corporation)
TV television
TVI television interference
Tx transmitter

U

UHF ultra-high frequency (300–3000 MHz)
UJT uni-junction transistor
UoSAT University of Surrey educational/research satellite (Great Britain)
USB upper sideband
UTC Universal Co-ordinated Time
uV ultra-violet light

V

V volt; voltage
VA Volt-Ampere
VCO voltage-controlled oscillator
VCR video cassette recorder
VCXO voltage-controlled crystal oscillator
VFBO variable-frequency beat oscillator
VFO variable frequency oscillator
VHF very-high frequency (30–300 MHz)
VLSI very large scale integration
VOM volt-ohm-milliammeter
VOX voice-operated switching
VR voltage regulator
VSWR voltage standing-wave ratio
VTVM vacuum-tube voltmeter
VU volume unit
VXO variable crystal oscillator

W

W watt; work
WAC Worked All Continents
WARC World Administrative Radio Conference
WAS Worked All States
wbfm wide-band FM
Wh watt-hours
wpm words per minute
ww wire wound; wire wrap
wx weather

X

X reactance; electrostatic field strength
xcvr transceiver
XO crystal oscillator
xfmr transformer
xmtr transmitter
xtal crystal
XYL wife

Y

Y admittance
YF wife
YL young lady or lady operator

Z

Z impedance; UTC time

Conversion Factors (Metric-Imperial)

1 millimetre (mm)	= 0.03937 inch
1 centimetre (cm) = 10mm	= 0.3937 inch
1 metre (m) = 100cm	= 39.37 inches, 3.28 feet, 1.094 yards
1 kilometre (km) = 1000m	= 3280.8 feet, 1094 yards, 0.621 miles
1 gram (g) = 1000mg	= 0.03574 ounces
1 kilogram (kg) = 1000g	= 2.2046 pounds
1 tonne (t) = 1000kg	= 0.98 ton, 2204.6 pounds
1 cubic centimetre (cm ³) = 1000mm ³	= 0.6102 cubic inches
1 cubic metre (m ³)	= 35.3 cubic feet, 1.3 cubic yards
1 litre (l)	= 0.220 imperial gallons, 0.264 US gallons
1 kilopascal (kPa)	= 0.145 lbs/sq. inch, 0.009867 atmospheres
1 kilojoule (kJ)	= 0.948 BTU, 0.239 kilocalories, 737.56ft/lb
1 kilowatt (kW)	= 1.34 horsepower, 73.7ft.lb/sec
1 Newton (N)	= 0.2248lb force
1 Tesla (T)	= 10,000 gauss
1 Weber (W)	= 10 ⁸ Maxwell

Prefixes for Multiples and Sub-multiples of Quantities

Multiple or Sub-multiple	Name	Prefix
10 ¹²	Tera	T
10 ⁹	Giga	G
10 ⁶	Mega	M
10 ³	Kilo	k
10 ²	Hecto	h
10	Deca	da
10 ⁻¹	Deci	d
10 ⁻²	Centi	c
10 ⁻³	Milli	m
10 ⁻⁶	Micro	μ
10 ⁻⁹	Nano	n
10 ⁻¹²	Pico	p
10 ⁻¹⁵	Femto	f
10 ⁻¹⁸	Atto	a

Preferred Number Series

(a)	10% Tolerance E12												
	10	12	15	18	22	27	33	39	47	56	68	82	
(b)	5% Tolerance E24												
	10	11	12	13	15	16	18	20	22	24	27	30	
	33	36	39	43	47	51	56	62	68	75	82	91	

Colour Codes

Tantalum Capacitors

Top/Middle band: Value in μF (2 digits)

Middle Spot: Multiplier

Bottom band: Maximum voltage

Colour	Value	Multiplier	Voltage
Black	0	×1	10.0
Brown	1	×10	1.6
Red	2	×100	0.4
Orange	3	×1k	40.0
Yellow	4	×10k	6.3
Green	5	×100k	16.0
Blue	6		20.0
Violet	7	×0.0001	
Grey	8	×0.01	25.0
White	9	×0.1	2.5

Capacitors

Top band: First digit of value

Second band: Second digit of value (gives value in pF)

Third band: Multiplier

Fourth band: Tolerance—White 10%, Black 20%

Bottom Band: Voltage

Resistors

Bands from closest to lead:

First digit of value

Second digit of value

Multiplier

Tolerance

Colour	Value	Multiplier	Tolerance
Black	0	×1	
Brown	1	×10	1%
Red	2	×100	2%
Orange	3	×1k	
Yellow	4	×10k	
Green	5	×100k	
Blue	6	×1M	
Violet	7	×10M	
Grey	8		
White	9		
Gold			5%
Silver			10%
No band			20%

Notes

1. 1% tolerance resistors have five bands. The first three give three digits of value, the rest as above.

2. Bands are closer to one end of the resistor. Read bands in sequence from this end.

Useful Formulae

- Wavelength (in metres)
Free space = $300/f(\text{MHz})$
Half-wave wire dipole = $143/f(\text{MHz})$
- Resonant frequency of an LC circuit
 $f = 0.159155/\sqrt{LC}$
- The quality factor or Q of a circuit at resonance is
 $Q = 2\pi f L/R$
- The 3dB bandwidth of such a single tuned circuit
 $B = f(\text{res})/Q$
- Estimate of transformer rating
Output = $31 A^2 \text{ Watts}$
where A = core cross-section in sq.ins.
or Output = $4.8 A^2 \text{ Watts}$ if A is in sq.cm.

Ohms Law

$$V = IR = W/I = \sqrt{WR}$$

$$I = V/R = W/V = \sqrt{W/R}$$

$$R = V/I = V^2/W = W/I^2$$

$$W = VI = I^2 R = V^2/R$$

Mains Plug Wiring

Phase	Brown	Red
Neutral	Blue	Black
Earth	Green/Yellow	Green

Average, Peak, RMS Values

	Average	Multiplication factor for sine wave		
		RMS	Peak	Peak-Peak
Average	—	1.1133	1.573	3.143
RMS	0.933	—	1.414	2.828
Peak	0.637	0.7073	—	2.033
Peak-Peak	0.323	0.3535	0.533	—

Hexadecimal Constants

HEX Code	Most Significant Bytes		Least Significant Bytes	
0	0	0	0	0
1	4096	256	16	1
2	8192	512	32	2
3	12288	768	48	3
4	16384	1024	64	4
5	20480	1280	80	5
6	24567	1536	96	6
7	28672	1792	112	7
8	32768	2048	128	8
9	36864	2304	144	9
A	40960	2560	160	10
B	45056	2816	176	11
C	49152	3072	192	12
D	53344	3328	208	13
E	57344	3584	224	14
F	61440	3840	240	15

HEX TO DECIMAL CONVERSION

Decimal Value=IV+III+II+I

ASCII Character Codes as defined in ANSI X3.4

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
0	0	NUL	32	20	SPACE	64	40	@	96	60	—
1	1	SOH	33	21	!	65	41	A	97	61	a
2	2	STX	34	22	"	66	42	B	98	62	b
3	3	ETX	35	23	#	67	43	C	99	63	c
4	4	EOT	36	24	\$	68	44	D	100	64	d
5	5	ENQ	37	25	%	69	45	E	101	65	e
6	6	ACK	38	26	&	70	46	F	102	66	f
7	7	BEL	39	27	'	71	47	G	103	67	g
8	8	BS	40	28	(	72	48	H	104	68	h
9	9	HT	41	29	)	73	49	I	105	69	i
10	A	LF	42	2A	*	74	4A	J	106	6A	j
11	B	VT	43	2B	+	75	4B	K	107	6B	k
12	C	FF	44	2C	,	76	4C	L	108	6C	l
13	D	CR	45	2D	-	77	4D	M	109	6D	m
14	E	SO	46	2E	.	78	4E	N	110	6E	n
15	F	SI	47	2F	/	79	4F	O	111	6F	o
16	10	DLE	48	30	0	80	50	P	112	70	p
17	11	DC1	49	31	1	81	51	Q	113	71	q
18	12	DC2	50	32	2	82	52	R	114	72	r
19	13	DC3	51	33	3	83	53	S	115	73	s
20	14	DC4	52	34	4	84	54	T	116	74	t
21	15	NAK	53	35	5	85	55	U	117	75	u
22	16	SYN	54	36	6	86	56	V	118	76	v
23	17	ETB	55	37	7	87	57	W	119	77	w
24	18	CAN	56	38	8	88	58	X	120	78	x
25	19	EM	57	39	9	89	59	Y	121	79	y
26	1A	SUB	58	3A	:	90	5A	Z	122	7A	z
27	1B	ESC	59	3B	;	91	5B	[	123	7B	{
28	1C	FS	60	3C	<	92	5C	\	124	7C	
29	1D	GS	61	3D	=	93	5D	]	125	7D	}
30	1E	RS	62	3E	>	94	5E	^	126	7E	~
31	1F	US	63	3F	?	95	5F	_	127	7F	DEL

ASCII Control Codes

NUL (Ctrl @) Null	DLE (Ctrl P) Data Link Escape
SOH (Ctrl A) Start of Heading	DC1 (Ctrl Q) Device Control 1
STX (Ctrl B) Start of Text	DC2 (Ctrl R) Device Control 2
ETX (Ctrl C) End of Text	DC3 (Ctrl S) Device Control 3
EOT (Ctrl D) End of Transmission	DC4 (Ctrl T) Device Control 4
ENQ (Ctrl E) Enquiry	NAK (Ctrl U) Negative Acknowledge
ACK (Ctrl F) Acknowledge	SYN (Ctrl V) Synchronous Idle
BEL (Ctrl G) Bell	ETB (Ctrl W) End of Transmission Block
BS (Ctrl H) Back Space	CAN (Ctrl X) Cancel
HT (Ctrl I) Horizontal Tab	EM (Ctrl Y) End of Medium
LF (Ctrl j) Line Feed	SUB (Ctrl Z) Substitute
VT (Ctrl K) Vertical Tab	ESC (Ctrl j) Escape
FF (Ctrl L) Form Feed	FS (Ctrl \) File Separator
CR (Ctrl M) Carriage Return	GS (Ctrl }) Group Separator
SO (Ctrl N) Shift Out	RS (Ctrl ^) Record Separator
SI (Ctrl O) Shift In	US (Ctrl _) Unit Separator

The RS-232C Interface

The basic RS-232C Electrical specifications

Communication rate:

0–20,000 bits per second

Driver output voltage levels, maximum no load:

–25V untitled-2 logic 1, +25V logic 0

Driver output voltage ranges for loads between 3k and 7k

Ohms:

Logic 1: 15V (7k) and –5V (3k)

Logic 0: +15V (7k) and +5V (3k)

Driver output current, short circuit:

500mA maximum

Driver output impedance with power off:

300Ω minimum

Maximum driver output slew rate:

30V per microsecond

Receiver input resistance:

7kΩ maximum

3kΩ minimum

Effective receiver input capacitance:

2500pF maximum

Maximum receiver input voltage range:

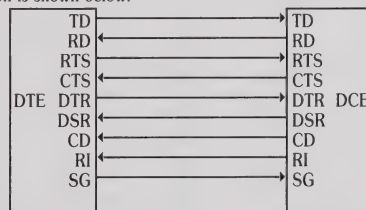
–25V to +25V

The following table shows the nine most common signals used for serial communications and their PIN allocations for nine and 25 PIN connectors:

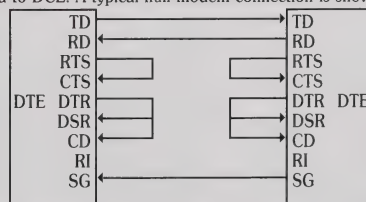
Signal	PIN No. (9 pin)	PIN No. (25 pin)
TD	3	2
RD	2	3
RTS	7	4
CTS	8	5
DSR	6	6
SG	5	7
CD	1	8
DTR	4	20
RI	9	22

Common RS-232C Connections

Each signal (except ground) is either an input or an output depending whether it is on the Data Terminal Equipment (DTE) (eg, a computer terminal) or the Data Circuit Terminating Equipment (DCE) (eg, a modem). A typical connection is shown below.



When two computer terminals (DTEs) are connected together, a “null modem” hook-up is needed to fool each DTE into thinking that it is connected to DCE. A typical null modem connection is shown below.

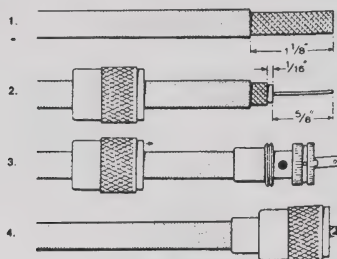


COAXIAL PLUG ASSEMBLY

RSGB VHF/UHF Manual

UHF type (soldered screen)—PL259

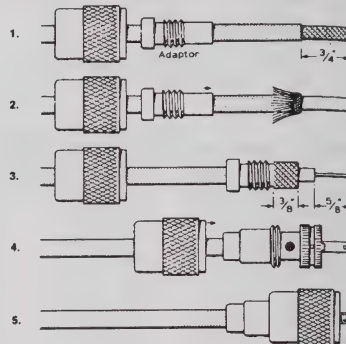
1. Cut end of cable even. Remove vinyl jacket $1\frac{1}{8}$ ".
2. Bare $\frac{3}{8}$ " of centre conductor. Trim braided shield. Slide coupling ring on cable. Tin exposed conductor and braid.
3. Screw the plug sub-assembly on cable. Solder assembly to braid through solder holes. Use enough heat to create bond of braid to shell. Solder centre conductor to contact.
4. For final assembly, screw coupling ring on plug sub-assembly.



UHF type (soldered screen).

UHF type (clamped screen)—PL259

1. Cut end of cable even. Remove vinyl jacket $\frac{3}{4}$ ". Slide coupling ring and adaptor on cable.
2. Fan braid slightly and fold back.
3. Position adaptor to dimension shown. Press braid down over body of adaptor and trim to $\frac{3}{8}$ ". Bare $\frac{3}{8}$ " of conductor. Tin exposed centre conductor.
4. Screw plug sub-assembly on adaptor, solder braid to shell through solder holes. Use enough heat to create bond of braid to shell. Solder conductor to contact.
5. For final assembly, screw coupling ring on plug sub-assembly.



UHF type (clamped screen).

COAXIAL CABLE SPECIFICATIONS

Type	Nom. Imp Zo	Outer Dia (mm)	Nom 50 MHz	100 MHz	200 MHz	400 MHz	1 GHz	Vel Factor %	Cap pF/m	Volts Vrms
RG-8/U	52	10.3	5.2	7.2	10.5	15.4	29.2	66.0	96.8	5000
RG-9/U	51	10.67	5.2	7.2	10.5	15.4	29.2	66.0	67.3	5000
RG-11/U	75	10.29	4.3	6.6	9.5	13.8	22.3	66.0	67.3	5000
RG-58/U	53.5	4.95	10.2	14.8	22.3	32.8	55.8	66.0	93.5	1900
RG-58A/U	50	4.95	10.8	16.1	23.9	37.7	70.5	66.0	101.0	1900
RG-58C/U	50	4.95	10.8	16.1	23.9	37.7	70.5	66.0	101.0	1900
RG-59/U	73	6.15	7.9	11.2	16.1	23.3	39.4	66.0	68.9	2300
RG-59B/U	75	6.15	7.9	11.2	16.1	23.0	39.4	66.0	67.3	2300
RG-62/U	93	6.04	6.2	8.9	12.5	17.7	28.5	84.0	44.3	700
RG-62B/U	93	6.15	6.6	9.5	13.8	20.0	36.1	84.0	44.3	700
RG-122/U	50	4.06	14.8	23.0	32.8	49.9	87.0	66.0	101.0	1900
RG-141A/U	50	4.06	6.9	10.5	15.4	22.6	41.7	69.5	95.1	1900
RG-142B/U	50	4.95	8.9	12.8	18.4	26.9	44.3	69.5	95.2	1900
RG-174/U	50	2.56	21.7	29.2	39.4	57.4	98.4	66.0	101.0	1500
RG-178B/U	50	1.83	34.4	45.9	62.3	91.9	150.9	69.5	95.1	1000
RG-178B/U	75	2.54	27.9	32.8	41.0	52.5	78.7	69.5	64.0	1200
RG-180B/U	95	3.56	15.1	18.7	24.9	35.1	55.8	69.51	49.2	1500
RG-187A/U	75	2.66	37.9	32.8	41.0	52.5	78.7	69.5	64.0	1200
RG-188A/U	50	2.59	31.5	37.4	46.6	54.8	101.7	69.5	95.2	1200
RG-196A/U	50	1.93	34.4	45.9	62.3	91.9	150.9	95.2	1200	
RG-213/U	50	10.29	5.2	7.2	10.5	15.4	29.2	66.0	101.0	5000
RG-214/U	50	10.8	5.2	7.2	10.5	15.4	29.2	66.0	101.0	5000
RG-223/U	50	5.38	10.1	14.8	21.0	30.2	63.5	66.0	101.0	1900
RG-303/U	50	4.31	6.9	10.5	15.4	22.6	42.7	69.5	95.2	1900
RG-316/U	50	2.49	30.8	34.1	43.3	54.1	101.7	69.5	95.2	1200
BEL 9913	50	10.29	3.0	4.5	5.9	8.5	14.8	84.0	78.7	—

NB: Except for Belden 9913, all specifications are referenced to MIL-C-17D/F or JAN-C-17A as applicable.



Many hams have a computer they use for the pursuit of our hobby, be it for general use such as word processing, entertainment, or for applications dedicated to amateur radio such as electronic design and calculation, Packet Radio, or other digital modes.

Another use of a computer is with a telephone modem. Many of us may have a modem but not have much of an idea of what to use it for. This is an introduction to the use of a computer and modem to connect to Bulletin Board Systems and the Internet.

The name modem is derived from MODulator/DEModulator, and for a phone modem it serves the same function as a radio modem. The modem takes data signals from the computer and converts them into an analogue signal for use over the phone lines.

In recent times telephone modem technology has gone to a point where most of us can afford a high-speed modem. When I refer to high speed here I refer to 14400-33600bps and higher with data compression and error correction capabilities. These are available! e for about the same cost as a TNC, but with greater capabilities.

These modems can achieve these high data rates because they have a continuous full duplex link to work with. Because the link is continuous they can train their signals, which takes a relatively long time, and should not have to re-train very often.

Many modern modems can be used for facsimile use as well as data.

Here are some terms, specification and abbreviations used for telephone modems.

Modem Terminology

AT Command set—A set of Modem commands, first developed by Hayes Corporation, and now an industry standard for the way that computers command modems.

CCITT—Consultative Committee, International Telegraph and Telephone. The international standards body of the ITU.

Hayes—A modem manufacturer that set some of the industry standards.

MNP4-10—Microcom Network Protocols. A set of protocols for error correction and data compression developed by Microcom. Some of these have been made available to the industry as a whole, and some are still proprietary to Microcom.

V.32—The CCITT Standard for 9600bps operation with fall back to 4800bps.

V.32bis—The CCITT standard for 14400bps operation with fall back to 12000, and 7200bps

V.34—The CCITT standard for 19200bps operation.

V.34bis—The CCITT standard for 28800bps operation.

V.42—A CCITT standard for error correction.

V.42bis—A CCITT standard for data compression

Bulletin Board Systems (BBSs)

Like the Packet equivalents, landline based phone BBS's provide for private email messaging, public message forums (usually lots of them), and files for downloading. As phone BBSs use faster modems they can allow for much greater volumes of messages and larger files for downloading. Many phone BBSs have hundreds of Megabytes, or even Gigabytes, of disk storage for these messages and files.

Also like Packet Bulletin Boards there are many landline BBSs systems that are linked together in a number of worldwide networks such as the FidoNet. Many of these are also connected to the Internet. This linking allows for a worldwide exchange of messages! and bulletins as in packet radio.

As these systems require a large amount of equipment, and the networks are based on dial up phone systems, they are costly to run, so they may require sponsorship and often charge a subscription or charge for some services. Some phone BBSs are small and often operate from someone's home computer in the late hours using the home phone line, others are more commercially oriented and have a number of phone lines available. As such, many phone BBSs are not around for very long, others however are there for the long term. You should always check the operating hours of any BBS that you connect to, and make sure that the phone number you have is in fact that of a BBS, and that is has not changed and is now someone's home phone number.

There are usually a number of available BBSs in most cities. Most of these will have a guest registration so you can have a look at the service, find out about the costs, if any, and allow for full registration on application.

The FidoNet is an organised network of phone BBSs around the world with organised groups of public messages, known as echos, as well as handling private messages. There are other similar networks that some BBSs connect to, however

FidoNet has been the most common one. In recent times connections to the Internet are becoming more common, either as an alternative or supplement to other networks.

There is an area on FidoNet specifically for New Zealand Amateurs, it is NZ AMRAD. For more information about NZ AMRAD contact: Trace Ward: Moderator NZ_AMRAD Packet ZL2BS@ZL2UFW.#46.nz.oc e-mail tward@taranaki.ac.nz FidoNet 3:775/90 or 3:775/30 FAX (06) 758-5309 Snail P.O. Box 4127, New Plymouth 4630

To connect to a phone BBS requires a phone modem, and a terminal program.

Modems range from 300 bps to 33 6 Kbps, and many have data compression and error correction capabilities to increase the overall throughput. These range in price from a few hundred dollars through to thousands of dollars for the most sophisticated models.

Terminal programs also range in capabilities and price. Many are available as shareware, one popular one is Telix. Windows comes with a simple terminal program built in, called Terminal, however this is pretty limited in its capabilities. Other commercial programs are also available, these range quite widely in price. One that used to be available as Shareware and is now commercial is Procomm, also available as Procomm for Windows. Most modems come with some form of terminal program, however, most of these have limited capabilities compared to other alternatives.

File Transfer Protocols

File transfer protocols are used to exchange binary files. Kermit, SeaLink, Tink, XMODEM, YMODEM, ZMODEM are various file transfer protocols for the transfer of binary files. They perform a similar function to the YAPP protocol for Packet, however they are much more advanced and make use of the full duplex capabilities of a telephone channel. Through the use of windowing protocols and low overheads they can achieve transfer rates very close to the line rate.

If you have a modem available then check out the local phone BBS scene, it may not be what you are looking for, but it can offer much more than packet radio in many respects. In particular many of the larger BBS's have a large collection of files, and usually you will find some amateur radio oriented programs amongst them.

Some BBSs

Here is a selection of BBSs that I have found. Please check the number has a modem on it by dialing it first, just in case any numbers are out of date already. Try one of the BBSs nearest to you, and it should have a more detailed and up to date list for your area, or for the whole country.

- Circuit Board—
 - Howick, Auckland—(09) 537-2822—24 Hours
 - Infoboard—Ranui, Auckland—(09) 833-8788—24 Hours
 - NZMC Maxie—Auckland—(09) 444-0989—24 Hours
- The Bridge Baud—Melville, Hamilton—(07) 843-0086—24 Hours
- InfoComm—Palmerston North—(06) 354-0245—24 Hours
- PlaNet Manawatu—Palmerston North—(06) 357-9245—24 Hours
- Leading Edge—Inglewood, Taranaki—(06) 756-8579—24 Hours
- CircuitBaud—Napier—(06) 835-4060—24 Hours
- Rosco's—Napier, Hawkes Bay—(06) 843-4297—24 Hours
- Actrix—Wellington—(04) 499-1708—24 Hours
- The Cave/2—Wainuiomata, Wellington—(04) 564-2260—24 Hours
- GenBOARD/2—Wellington—(04) 479-1960—24 Hours
- RomBoard—Island Bay, Wellington—(04) 383-6040—24 Hours
- BitStream—Nelson—(03) 548-5321—24 Hours
- SunCity—Nelson—(03) 548-9171—24 Hours
- Mirth Control—Avonside, Christchurch—(03) 389-0898—24 Hours
- On Line Support—Christchurch—(03) 366-7324—24 Hours
- Planet Melmac EIS—Christchurch—(03) 348-6522—24 Hours
- Prompt/2—Christchurch—(03) 379-8522—24 Hours
- Tony's—Christchurch—(03) 383-1155—24 Hours
- Choice—Ashburton—(03) 308-5201—24 Hours
- Info Zone—Mornington, Dunedin—(03) 453-6897—24 Hours
- A Place to Stand—Invercargill—(03) 216-2947—24 Hours

The Internet

The Internet is a worldwide network of computer systems connected by leased lines, dialup lines, and other technology, including

packet radio. The US Department of Defense originally developed this network of systems. This network developed to include research institutes and universities all over the USA. Later the net expanded to include universities and other research institutes around the world. Over time many commercial companies have joined in the development and extension of the Internet, and now offer many services.

In New Zealand the Internet connection was initially sponsored by a part of the US NASA organisation, and this was for use by academic and research institutes, but now extends to the commercial and private sectors.

The Internet is based on the TCP/IP suite of protocols and services, and is supported by many types of computer systems.

The basic services provided are as follows:

Email—Electronic mail is transported in real time, or in batch transfers over the network using either TCP/IP protocols for real time connections, or using the Unix based uucp protocols on dial up connections. Some TCP/IP based dial up connections may be used for low volume connections. This is similar to our own personal email provided by the packet BBS network. Email can also be used to send binary files. Like in the world of packet radio, this usually requires the binary files to be converted to a coded text format. The most common format is UUENCODED, this is similar in concept to R95 and 7PLUS encoding formats used on packet radio.

UseNet or News—This is a collection of news groups, or topics, where messages are posted for public distribution. These messages can then be viewed, and responded to. These are similar to Bulletins in the packet radio BBS world, except that they cover a much wider range of topics and are more organised into groups of related messages. There are more than 4000 news groups, and these are growing and changing all the time. News groups are broken down into a hierarchical structure. Some of the top level groups are based on the following:

- alt Alternative news groups
 - comp Computer related news groups
 - rec Recreation related news groups
 - sci Science related news groups
- Some of the news groups of interest to hams include:
 - rec.radio.antenna
 - rec.radio.digital.misc
 - rec.radio.equipment
 - rec.radio.homebrew
 - rec.radio.policy
 - rec.radio.space

FTP or File Transfer Protocol—Many of the systems on the Internet

have storage space set aside for files that are available to their own users or to any users. Systems that are open to all users are known as Anonymous FTP sites, as they allow anyone to login as the anonymous user. These sites often hold huge repositories of freely distributable files.

Some useful FTP sites for Amateur Radio software:

Home of TNOS
ftp://ftp.lantz.com

TAPR files
ftp://ftp.tapr.org/tapr

UCSD Hamradio Archive
ftp://ftp.ucsd.edu/hamradio

The latest arrivals at UCSD
ftp://ftp.ucsd.edu/hamradio/
packet/tcpip/incomingftp://pc.usl.edu/hamradio/

JNOS Updates
ftp://ftp.demon.co.uk/pub/hamDemon.co.uk
Unibol.com
ftp://ftp.unibol.com/pub/ham

Funet Hamradio Archive
ftp://ftp.funet.fi/pub/ham/
ftp://oak.oakland.edu/pub/hamradio

Boston Amateur Radio Club
ftp://oak.oakland.edu/pub/SimTelnet/msdos/hamradio
SimTel/msdos/hamradio
ftp://oak.oakland.edu/pub/SimTelnet/msdos/packet
SimTel msdos/packet
ftp://oak.oakland.edu/pub/SimTelnet/win3/hamSimTelwin3/hamradio
SimTel win95/hamradio
ftp://oak.oakland.edu/pub/SimTelnet/win95/ham

Telnet—Telnet is a network based terminal emulation protocol that allows users to connect to systems across the network. This allows users to login to their accounts and run applications, this facility may also be open to other users providing access to public applications.

Archie—Archie is a database system that allows you to search for the location of files on listed FTP sites. This helps you to 'navigate' the many FTP sites on the 'net to find what you are looking for.

Mailing Lists—Mailing lists are automated systems that receive messages from anyone subscribed to the list, and then send the message to all recipients of the list. This system is usually used for discussion topics for smaller groups, rather than news groups, which are for larger groups of readers. These mailing lists are usually more specialised, and usually have a greater information content.

Automated systems that run mailing lists are often able to provide other services. One such service is an information server, this allows users to send messages to the server to request information which can be sent back in the form of electronic mail.

Some of the more sophisticated information servers can receive requests for other services, such as Archie search requests, and even file transfers.

Other Amateur Radio based Mailing Lists for information is as follows:

Send a message to Listproc@hydra.carleton.ca, with Help as a single line in the body of the message for more details about how to subscribe to:

The KA9Q NOS-BBS Mailing List

The Canadian

AMPRnet Mailing List

The PI/PI2 Card Users Mailing List

Send a message to listserv@netcom.com, with Help as a single line in the body of the message for more details about how to subscribe to:

The NewsLine Mailing List

The Ham-Tech Mailing List

The Fox

Hune Mailing List

Send a message to listserv@arrl.org, with Help as a single line in the body of the message for more details about how to subscribe to:

The ARRL Bulletins W1AW Mailing List

Send a message to listserv@tapr.org, with Help as a single line in the body of the

message for more details about how to subscribe to:

The TAPR Bulletin Mailing List

The TAPR TNC Mailing List

The DSP-93 Mailing

List

The Net-SIG Mailing List

The APRS-SIG Mailing List

The HF-SIG Mailing List

Send a message to

listserv@amsat.org, with Help as a single line in the body of the message for more details about how to subscribe to:

The AMSAT News

Service Mailing List

The AMSAT bulletin board Mailing List

The Keplerian Elements Mailing List

The NASA related information Mailing List

The Shuttle Amateur Radio Experiment Mailing List

Some Amateur Radio based Information Servers that you can get information from are:

Send a message to info@arrl.org, with Help as a single line in the body of the message for more details about the ARRL information server.

Send a message to listserv@tapr.org, with Help as a single line in the body of the message for more details about the TAPR information server.

Connecting to the net

There are a number of ways to connect to the Internet.

UUCP Connections

UUCP is a file transfer protocol from Unix, it stands for Unix to Unix CoPy, however it is available on many systems, including PC's.

A UUCP connection allows for the transfer of mail or news files from a system connected to the Internet. A UUCP connection does not allow you to perform activities that require a direct connection to the 'net, such as FTP, Archie or WWW access. However, some of these can be achieved via email from servers that provide a mail based service.

Interactive Access

Interactive access is available by connecting by modem and terminal software to a system that is connected to the Internet. This may be a Bulletin Board System, or some other kind of host system, such as a Unix system or any other TCP/IP system such as JNOS or other KA9Q based NOS system. These systems provide access to services that require a direct connection to the Internet, but only give you a character based terminal access. Any file transfers made to the system, or transferred back to your computer, probably use a standard file transfer protocol as mentioned above.

Dial Up Access

Dial-up access over a dial-up phone line requires a computer system that provides a dialup TCP/IP software connection. Normally these have been Unix based systems, but there are now many systems for PC's. SLIP, Serial Line Internet Protocol, is the traditional form of connecting TCP/IP systems over serial lines. This is supported by Unix systems, NOS based systems, and now is readily available for DOS based systems, it is also included in many others such as OS/2, Windows NT, Win95 etc.

PPP, Point to Point Protocol, is becoming the preferred means of providing serial connections, it is more flexible and provides better compression options.

To make a SLIP or PPP connection requires a service provider that is directly connected that will allow you to connect to them via SLIP or PPP.

Direct Access

Direct access requires a dedicated connection to a system that is already directly connected to the Internet. Mostly direct connections

are over leased lines of some sort, however it is possible to make a direct connection over a TCP/IP based radio network system. As the Internet is not controlled, and Internet Service Providers (ISP) are providing a commercial service these links cannot be made on amateur radio frequencies.

There are many ISP's now available providing all of the above types of access to the Internet. Many of these have developed from commercial BBS type system operators, and as such may not offer high levels of service and support to beginners. However there are a growing number of providers that are supplying a full commercial service including high levels of service and support.

There are a number of ISP's around the country that you can connect to the Internet with. The biggest two are Telecom with XTRA, and Clear with Clear.Net. Contact them or checkout your local Yellow pages, or paper for local ISP's.

The World Wide Web (WWW)

The World Wide Web is a set of protocols that allow information to be presented on the Internet in a means that is easy to access. The Web is made up of 'pages' of information, which often have links to other pages. This is based on the Hypertext system used in many on-line help systems. This allows for a linked system of text and graphical information. There are already many ham radio oriented web pages.

Information on World Wide Web Pages is accessed through a "Univer-

sal Reference Locator" or URL.

NZART has a presence on the World Wide Web, and its URL is:

<http://www.nzart.org.nz/nzart>

Here you can find current information about NZART services, news, and events, information about Branches and general information about NZART.

As a subset of the NZART pages are pages for a number of Branches, and Pages for AMSAT-ZL and AREC.

<http://www.nzart.org.nz/amsatzl>

<http://www.nzart.org.nz/nzart/arec>

<http://www.nzart.org.nz/branches.html>

Here are some other URLs that I am aware of:

ARRL Home Page

<http://www.arrl.org>

TAPR Home Page

<http://www.tapr.org>

AMSAT Home Page

<http://www.amsat.org>

The International Amateur Radio Union (IARU) Home Page

<http://www.iaru.org>

Radio Resources on the Internet

http://www.iua.upf.es/~ramon/lo_u_ham.html

Amateur Radio Internet Resources

<http://net.unl.edu/~praeurner/ama-teur.html>

QRZ's List of Links

<http://www.qrz.com/www.ham.html>

Note that many parts of the Web are 'under construction' so may not always be available, or work the way they should do.

To access the World Wide Web requires a connection to the Internet,

either through a dedicated connection or some sort of dial-up connection to, such as a SLIP or PPP connection. To use this connection to the Web requires a Web Browser, which is software used to connect to Web servers over the Internet and retrieves information available on their pages.

There will be follow up information on the Internet and the World Wide Web in the Digital Modes Column of Break-In later in the year.

Other Services

There are many other services accessible with a computer and a modem, however, most of these are based in the USA, and as such have been very expensive to access. Services such as Bix, CompuServe, Genie, America Online, and other on-line services have been around for a long time. They provide similar

services to BBS's and the Internet, but as a commercial service. CompuServe is now providing local access to the major centers in New Zealand. Other service providers such as IBM, Microsoft, Apple, and Lotus are now starting to offer on-line services with global access, including New Zealand. These services, typically, also provide Internet and World Wide Web access.

As new communications networks based on satellites become more available, new services with complete global access at low cost will become a reality.

The Global Data Super Highway is in its early growth stages, but is here to stay, and is growing at a rapid rate, will Amateur Radio be a part of its development, or will we become even further behind if we do not keep up with emerging technologies.

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Old Timers' Club (ZL)

The objects of the Old Timers' Club (ZL) are set out in our Constitution adopted in 1993. They are as follows:

1. To recognize service to Amateur Radio;
2. To revive and maintain interests and good fellowship among the older members in the common cause.
3. To offer advice and encouragement to newer Amateurs.

The Club is duly affiliated to the New Zealand Association of Radio Transmitters (Inc).

Patron: To be advised.

Grand Old Man: W. T. Smith ZL2GG

Secretary: P. Anderson ZL1LR

Net Controllers:

R. Symon (Roy) ZL2KH

D. Dalrymple ZL3SZ

B. Lawn (Brian) ZL2AJS

J. L. Leitch ZL2ASL

S. Hoogeveen (Bill) ZL2BQX

80m AM Phone—D. Alexander

(Doug) ZL2AWF

Districts Representative Committee:

H. Martin ZL1PX, G. Rouse ZL1AQ, D. Leslie ZL2UH, E. Belcher ZL3QY, V. Jackson ZL4BO, D. Dalrymple ZL3SZ, D. Bradfield ZL1DAQ.

OTC Scribe: G. Cooper ZL1KL

Certificate Preparation and Assistant

Secretary: A. Anderson ZL1TAF

A National Single Side-band Net is held every Sunday morning at 9.30 am. The call-sign is ZL6OTC. The frequency is 7.058 MHz but if propagation is poor on 40 m, the net may QSY to 3.865 MHz. An AM Net is also run on Sunday morning at 10.30 am on 3.850 MHz. The Secretary gives the Club News at 10.00 am on the SSB Net.

Full membership is available to any holder of a ZL call-sign who has held an amateur licence for the last 25 years or more and is still an active amateur.

In addition, Associate Membership is available to any ZL amateur who has attained the age of 60 years (and over) and has been an active amateur for 10 or more years. Voting privileges are not available to Associate Members.

Application Forms for membership may be obtained from a District Representative or from the National Secretary. A joining fee of \$10.00 is payable on application.

Evidence of eligibility which is to be submitted shall include, full name, present call-sign, original call, operator's certificate number and date of original licence. All applications for membership shall be proposed and seconded by present OTC members.

Although there is no fee or annual subscription, a donation is appreciated on joining to cover costs of certificates, *Blue Book* and postages.

On acceptance a Certificate is issued to all Full and Associate Members, and they will be listed in the *Blue Book*. In addition further hand-some certificates are available on request to those who attain 50, 60 and 70 years of Amateur Service.

All members of OTC are eligible to wear the Peacock Blue NZART Badge with call-sign so long as they are financial members of NZART. This badge is available from NZART HQ at the current price of the similar black membership badges.

All correspondence should be addressed to the National Secretary: Peter C. Anderson ZL1LR, 32 Gil-mour Street, Waihi 3061. If a reply is expected, please enclose a stamped, self-addressed envelope.

Articles relating to all aspects of OTC or of vintage radio for publication in the OTC section of *Break-In* are welcomed by, and should be addressed to our Scribe, Gordon Cooper, 34 Omokoroa Road, Omokoroa, Tauranga 3050.

Jamboree On The Air



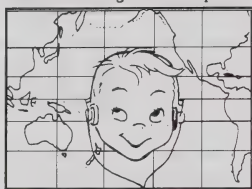
International Scouting and Guiding communications by amateur radio.

The Jamboree on the Air (JOTA) is an annual international activity which enables Scouts and Guides living all over the world to communicate by amateur radio. This enables them to find out at first hand what it is to be a member of the worldwide fellowship of Scouts and Guides. It gives them an understanding and appreciation of other ways

of life and of Scouting and Guiding in other countries.

Now, over 500,000 Scouts and Guides take part in JOTA from more than 10,000 amateur stations. JOTA contacts are made within and between countries all over the world—where ever there are Scouts and Guides. These now include some of those which were previously behind the Iron Curtain and in which Scouts and Guides were banned. No other worldwide activity involves more Scouts and Guides or amateurs than JOTA.

The easiest way for Scouts and Guides to take part in JOTA is for them to visit an amateur station sometime during the JOTA period.



At the station the amateur establishes a contact with another amateur station and then hands over the microphone to the Scouts and/or Guides for them to talk to those at the other station. Packet, Satellite, SSTV and other modes of communication (including Email) are now also used for JOTA purposes.

Many Scout Districts have their own District JOTA Organizer who makes arrangement for the local Scouts and Guides to take part in JOTA. Some Scout Groups and Guide Companies have close contacts with local amateurs (eg parents) and make use of their stations for their JOTA activities.

Many stations are set up at a Scout or Guide Headquarters, or at some local "interesting" or appropriate venue.

Many other JOTA stations are set up at camps, the radio activities being incorporated into the camping programme.

JOTA is co-ordinated by the World Scout Bureau in Geneva and

is organized by National Organizers in each Scouting country.

JOTA is always held during the 24 hours (local time) of the third full weekend in October. In 1996, JOTA will be on October 19 and 20—the weekend before Labour Weekend. Activity may continue into the Monday if desired so that Scouts and Guides in countries on the other side of the International Date Line may be contacted for a longer period.

Christine Ramsey ZL1LQ assists me in her capacity of New Zealand Girl Guide JOTA Organizer.

Jim Parnell
National Organizer for JOTA in New Zealand
Packet:

ZL2APE@ZL2WA.#60.WLG.NZL.OZ

Email:

parnell_j@kosmos.wcc.govt.nz



SPAM—Society for the Preservation of Amplitude Modulation

Secretary/Treasurer

Roy Symon ZL2KH
25 Annadale Street
New Plymouth 4601
Telephone (06) 758-2156
Packet: ZL2KH@ZL2AB

Librarian and Archivist

Phillip Brown ZL2IM
20 Nevada Drive
New Plymouth
Telephone (06) 757-8711

Meetings

Held annually at Queen's Birthday Weekend in conjunction with NZART Conference.

Aims and Objects

To preserve Amplitude Modulation as a means of Amateur Radio communication.

General

In order to keep expenses to a minimum, membership lists, finan-

cial statements, information, etc, sought by members will be sent on receipt of a stamped and addressed envelope. The information sought will be sent as soon as possible.

Nets

There are nets operating at present on AM on 3.850 MHz at the following times:

Monday to Saturday at 0900 hours.

Monday to Friday at 1900 hours (Petone based).

Wednesday evenings at 2030 hours (Taranaki based).

Friday evenings at 2000 hours (Northern area based).

A regular monthly net is held on SSB (LSB) on 3.593 MHz at 1930 hours on the first evening of each month—so the day of the week will change—to discuss AM matters including who needs what and who can possibly provide the same—Members are encouraged to participate.

A national database of information and parts' sources, and wants, has been set up so that those seeking can be joined up with those willing to provide. All enquiries or offers of assistance should be directed to me on the air or at the above address.

Why have SPAM?

Our librarian, Phillip ZL2IM, has the following reason:

"The XYL says, 'What are you going to do with that heap of junk? Why not take it to the tip when you dump the garden clippings?' You mutter something like, 'Oh I'm going to put it on the air next Nostalgia Night.' Half satisfied she backs off. But you're left thinking, 'How am I going to get it going? I've got no power supply for valve gear', or 'There's a capacitor dribbling in the case', or 'I've forgotten my valve theory', or 'I haven't got a circuit diagram.'—and you hope she won't

say next August 'What night is Nostalgia Night, dear?'. 'Grrr', you think. But it niggles at you, sort of.

"SPAM is here to preserve AM gear and its use (perhaps its secret agenda is to protect OMs from XYLs!)."

Suggestions

1. Send \$5.00 membership to ZL2KH.
2. Tell ZL2IM what gear you have (ZC1, WS19, ARC5, etc).
3. Ascertain what gear is on file at the SPAM Library. Buy copies at 20c per page.
4. Get stuck in.

If it blows up, XYL will be delighted. If it goes, we'll hear you on Nostalgia Night. Then you can show your new certificate to her. It may not please her but you'll feel justified for ages, and you had a lot of fun.

THE NZART RADIOSCIENCE EDUCATION TRUST

A formally constituted independent Charitable Trust under the auspices of the NZART.

The objectives of the Trust are to apply the Trust's income to promote and encourage education in radio-

science, whether by payment of course fees for worthy candidates, providing prizes for excellence in education, or for similar educational purposes.

The objectives are set out in the

Deed or Trust. The fund is governed by three Trustees.

The Trust relies on bequests and donations for its funding. All contributions are welcome.

Enquiries in confidence are wel-

come. Write to the NZART Radioscience Education Trust, Box 1733, Christchurch 8030.

NZART
working for Amateur
Radio in New Zealand



Object

To promote and encourage interest in Amateur Radio amongst women.

WARO was formed in 1961-62 by a small but keen group of YL transmitters and has steadily grown both in numbers and enthusiasm ever since.

For the annual subscription (constantly under review, currently \$10.00 for New Zealand members) members receive four quarterly Bulletins containing items of interest to operators and friends, with special attention to YL activities.

Associate members—YLs who do not have a transmitting licence are welcome, as are YLs from overseas, many of whom are sponsored by ZL members.

The Thelma Souper Memorial Contest is held annually in early April in honour of our founder. It is open to YLs and OMs and is held on the lower end of the 80 m band.

The WARO Achievement Award may be awarded annually to persons nominated by their peers for outstanding achievements in any aspect of Amateur Radio. Nominations close at the end of March each year and the Award is presented at the AGM in June. The form this takes is the Myrtle Earland Memorial Rosebowl in honour of New Zealand's first licensed YL.

WARO also operates several awards including the WARO Award and the Mountain Buttercup Award. For further details on these see the Awards section elsewhere in this Call Book.

Elected Officers

Patron:
Pearl Neilson ZL2QY.

President:
Jill O'Donnell ZL2DBO.
Vice-President:
Bev Osborne ZL1OS.
Secretary:
Jeanne Gilchrest ZL4JG.
Treasurer and Membership Applications:
Judith Hildreth ZL1JDL.
Executive:
Celia Reed ZL1ALK.
Bev Gilman ZL3TCR.
Award Custodian:
Eileen Bain ZL1BRX.
Contest Manager:
Eileen Bain ZL1BRX.
Bulletin Editors:
Binny Owen ZL2AZY.
Joline Beale ZL1UJB.
Official Broadcast:
Cathy Purdie ZL2ADK
Sponsorship Secretary:
Dawn Young ZL2AGX.
Librarian and Columnist:
Margaret McConnachie ZL3UD.

YL Nets:

All times NZT unless stated otherwise.
WARO VHF
Auckland: Sunday 1900z 146.900 (Bombay 690).
Wellington: Second Sunday 1900z 146.856 (Kapiti 685).
New Plymouth: Friday 2000z 147.050 (Egmont 705).
Palmerston North: First Sunday 1900z 146.650 (Wharite 665).
Canterbury: Monday 2100z 147.250 (Canterbury 725).
WARO HF
WARO: Mondays 2000z 3695 MHz $\pm$.

Executive: Second Sunday 2000z 3695 MHz $\pm$.
International
ALARA: Mondays 1030 UTC 3580 MHz $\pm$.
YL "222": Mondays 0600 UTC 14.222 (Net Control Dave ZL1AMN).
VK6DE: Fridays 0400 UTC 21.188 MHz (mostly VK and ZL).
VE/VK/ZL: Fridays 0500 UTC 14.148 MHz.
BYLARA: Wednesdays/Saturdays 1115z BST 7050/7090 $\pm$ QRM.
CLARA: Tuesdays 1700 UTC 14.120 MHz (Alternate frequency 14.180 MHz).
YLRL:
YL ROSES—Mondays 1800 UTC 28.433 MHz.
QCWW—Tuesdays 1800 UTC 14.295 MHz.
YL Open House—Wednesdays 1900 UTC 14.288 MHz (one hour earlier daylight savings time).
Tangle Net—Thursdays 1800 UTC 14.298 MHz.
European DX/YL: Thursdays 1700 UTC 14.242 MHz $\pm$. (Net Control Christine GM4YMM).
Italian YL: Mondays 1400z GMT summer/ 1300z GMT winter 7070 MHz $\pm$.
Finnish TL: Sundays 3688 or 3710z (Phone) 3533 or 3522 (CW) no times given.

DX sponsorship

It is great to sponsor a YL from another YL organization—increases your awareness of other countries and their people. We have DX-spon-

sored members from all over the world and it does help to forge greater bonds between all of us. To sponsor a YL contact the Sponsorship Secretary for further information and contacts. It costs the value of a DX membership subscription and the chance to exchange news and views with each other.

YL Get-Togethers

These are held regularly throughout the country as well as the annual Get-Together at the time of our AGM in June. Consider going along to these affairs—they are a lot of fun.

WARO Bulletin/Break-In page

Copy is always required for these publications and any news/views of/by or from members are very welcome by the two persons concerned. Photographs are especially welcome—how about sending some in NOW.

Enquiries are always welcome from any YL for membership/fellowship in all of our activities. Feel free to contact any of the above-mentioned YLs or any other member of WARO. And always be on the lookout for ZL6YL—our own callsign.

YL Activity Days

Aims: to meet and get to know many of the YLs normally only contacted briefly in contests, without the contest pressure. To have more personal QSOs than is possible in a formal YL Net. To meet old and new friends without the necessity of making numerous skeds.

Date: The sixth of every month.

Frequencies: Around 14.288, 21.188, 21.388, 28.688 MHz.

Times: On the hour, every hour. Call CQ YL if no YLs heard. Others may be listening!

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The Amateur's Code

AFFILIATED SOCIETIES

WARO

New Zealand Women Amateur Radio Operators

Postal address 34 Cobham Drive, Kawerau 3082
 Call-sign ZL6YL
 Net Information 3695 kHz Mondays at 8 pm
 any fifth Monday on 3620 kHz at 8 pm
 President Jill O'Donnell ZL2DBO
 Contact Person Jeanne Gilchrist ZL4JG
 Contact Phone (03) 488-0608
 Meeting Information Annually at NZART Conference

OTC

New Zealand "Old Timers" Club (ZL)

Postal address 32 Gilmour Street, Waihi 3061
 Call-sign ZL6OTC
 Net information Sundays 9.30 am 7058 kHz SSB and
 10.30 am 3850 kHz
 Grand Old Man W. T. Smith ZL2GG
 Contact Person Peter Anderson ZL1LR
 Contact Phone (07) 863-7546
 Meeting information Annually at NZART Conference

Cook Islands Amateur Radio Society

Postal address PO Box 277, Rarotonga, Cook Islands
 Call-sign ZK1DB
 Net information As required
 President Variable
 Contact person Arnold Gibbons ZK1DB
 Contact Phone/Fax (0068) 221-934
 Meeting information Visitors to Cook Islands

Kapiti Coast Museum Incorporated

Postal address 9 Elizabeth Street, Waikanae 6454
 Call-sign ZL6KCM
 Net information As required
 Convenor Max Kempson ZL1VV
 Contact Person Harold Pinny ZL2AZP
 Contact Phone (04) 293-3085
 Meeting information Visitors to the Museum

CARDS

Canterbury Amateur Radio Development Society Incorporated

Postal address PO Box 21-188 Edgware, Christchurch 8030
 Call-sign ZL3MJS
 Net information As required
 President Michael Stubberfield ZL3MJS
 Contact person Michael Stubberfield ZL3MJS
 Contact Phone (03) 355-7925
 Meeting information Periodically

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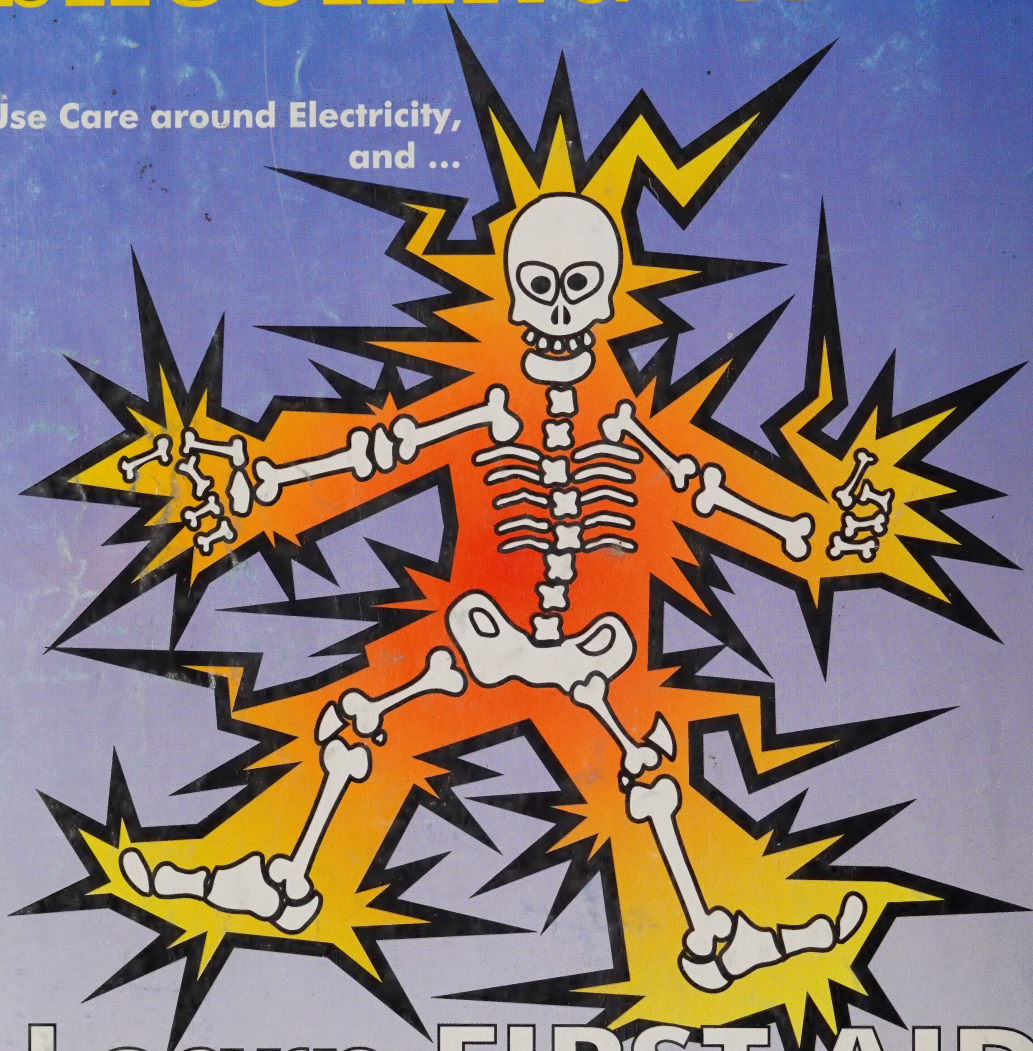
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